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EFFECT OF THIOSULFATE ON ARSENIC EXCRETION

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It is our purpose not to cite the numerous opinions to be found in the literature regarding the effect of thiosulfate on urinary excretion of arsenic, since this has recently been ably reviewed by Muir, Stenhouse and Becker,[1] but to attack this controversial problem from an experimental angle.

Injections of thiosulfate are given for two purposes: (1) to relieve dermatologic symptoms and (2) to aid in diagnosis, the theory being that a course of thiosulfate will lead to exaggerated arsenic excretion in cases in which this element is stored in the tissues. In some clinics it has been the custom to administer thiosulfate on Monday, Wednesday and Friday in 1 Gm. doses and to instruct the patient to collect a twenty-four hour specimen of urine for examination as to arsenic content on the following Saturday. It was this practice which originally interested one of us (M. R. M.) in the question, since specimens thus collected frequently contained so little arsenic that the dermatologists registered complaints with the laboratory. In short, patients with apparent arsenical dermatitis failed repeatedly to respond to thiosulfate by excreting arsenic as measured in the twenty-four hour output of urine.

To determine the advisability or necessity of continuing this practice, patients were sought who would agree to be hospitalized and to follow instructions in an intelligent and cooperative manner. After a study of a small but well controlled group Mattice and Weisman [2] reported that

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1. Muir, K. B.; Stenhouse, E., and Becker, S. W.: Action of Sulfur-Containing Compounds in Arsenical and Mercurial Poisoning, Arch. Dermat. & Syph. **41**:308 (Feb.) 1940.

2. Mattice, M. R., and Weisman, D.: Urinary Excretion of Arsenic: II. The Influence of Thiosulfate, Am. J. M. Sc. **193**:420 (March) 1937.

intravenous injections of sodium thiosulfate do not increase the urinary elimination of arsenic but tend to diminish it, not only on the day of injection but subsequently. While these subjects were suspected of exposure to sufficient arsenic to cause their symptoms, actual proof thereof was lacking. More recently [3] further confirmation of the negative effect of thiosulfate has been obtained in a case of arsenical dermatitis under rigidly controlled circumstances.

With the belief, however, that more conclusive information could be secured by testing patients receiving arsenical treatments, search was made among the syphilitic persons in the penitentiary on Riker's Island for a suitable subject. Although control of diet is extremely important for subjects with an unknown arsenical history, it is of less consequence when arsenicals are introduced during the observation period. A survey of the prison diet revealed that its probable arsenic content was considerably less than average. Cereals constituted a much larger proportion of the diet than did fruits and vegetables of the sort which are commonly subjected to arsenical sprays. It was assumed, therefore, that the daily output from dietary sources [4] would not exceed 0.35 mg., results being expressed as arsenic trioxide. This assumption is supported by the data secured under control conditions.

EXPERIMENTS

Urine was collected over a five week period except on Sundays. This day was omitted since the patient could not be kept under the close scrutiny otherwise maintained. The findings are presented in table 1. When the arsenical and the thiosulfate were given an hour apart (fourth week) the suppression of urinary arsenic was almost incredible. Analyses were done in triplicate by the Osterberg electrolytic Gutzeit method [5] under conditions previously stipulated.[6] That arsenic was not lost was evidenced by the remarkable output in the fifth week.

This was not the first time that such behavior had been observed. Earlier attempts to carry on studies through the clinic of the prison had been stopped when the sort of results shown in table 2 were encountered. Despite evidence to the contrary, it was felt that some "slip-up" had occurred. The subject reported in table 3 had reacted unfavorably to arsenical treatment and was undergoing a course of injections of thiosulfate prior to resumption of antisyphilitic measures. The record of the twenty-four hour volumes of urine was mislaid, so that the daily

3. Abramowitz, E. W., and Mattice, M. R.: Unpublished data, 1940.

4. Mattice, M. R., and Weisman, D.: Urinary Excretion of Arsenic: I. Normal Subjects, Am. J. M. Sc. **193**:413 (March) 1937.

5. Osterberg, A. E.: A Modification of the Electrolytic Gutzeit Apparatus for the Estimation of Arsenic in Biological Material, J. Biol. Chem. **76**:19 (Jan.) 1926.

6. Mattice, M. R.: Chemical Procedures for Clinical Laboratories, Philadelphia, Lea & Febiger, 1936.

output of arsenic is not determinable. The concentrations, however, are significant. The third week was intended as a control period without medication. Because of the unexpected results, the investigation

TABLE 1.—*Urinary Output of Arsenic After Administration of Neoarsphenamine and/or Sodium Thiosulfate**

	First Week	Second Week	Third Week	Fourth Week	Fifth Week
Monday					
Medication	Neoarsphenamine	Sodium Thiosulfate	Neoarsphenamine	.....	Neoarsphenamine
Urine volume, in cubic centimeters	.....	1,120	1,850	2,350	2,350
Arsenic, in milligrams of As_2O_3 per hundred cubic centimeters	.....	0.18	0.20	0.14	0.20
Total arsenic, in milligrams of As_2O_3	.....	**2.01**	**3.70**	**3.29**	**4.70**
Tuesday					
Medication	.....	.....	.....	Neoarsphenamine, sodium thiosulfate	.....
Urine volume, in cubic centimeters	840	1,210	1,760	1,875	1,400
Arsenic, in milligrams of As_2O_3 per hundred cubic centimeters	0.50	0.17	0.60	0.07	0.80
Total arsenic, in milligrams of As_2O_3	**4.20**	**2.06**	**10.56**	**1.31**	**11.20**
Wednesday					
Urine volume, in cubic centimeters	1,120	1,400	1,750	1,820	1,960
Arsenic, in milligrams of As_2O_3 per hundred cubic centimeters	0.50	0.14	0.40	0.06	0.50
Total arsenic, in milligrams of As_2O_3	**5.60**	**1.96**	**7.00**	**1.09**	**9.80**
Thursday					
Urine volume, in cubic centimeters	1,120	1,850	1,680	1,790	1,175
Arsenic, in milligrams of As_2O_3 per hundred cubic centimeters	0.25	0.06	0.40	0.05	0.70
Total arsenic, in milligrams of As_2O_3	**2.80**	**1.10**	**6.72**	**0.90**	**8.22**
Friday					
Urine volume, in cubic centimeters	1,030	2,325	1,400	840	1,625
Arsenic, in milligrams of As_2O_3 per hundred cubic centimeters	0.35	0.04	0.36	0.03	0.50
Total arsenic, in milligrams of As_2O_3	**3.60**	**0.93**	**5.04**	**0.25**	**8.12**
Saturday					
Urine volume, in cubic centimeters	840	1,760	1,400	1,760	1,450
Arsenic, in milligrams of As_2O_3 per hundred cubic centimeters	0.20	0.08	0.25	0.015	0.50
Total arsenic, in milligrams of As_2O_3	**1.68**	**1.41**	**3.50**	**0.26**	**7.25**

* Read down the table for arsenic excretion (total per day shown in bold face numbers). Neoarsphenamine (0.6 Gm.) and sodium thiosulfate (1 Gm.) were given in the morning on alternate Mondays except for the fourth week, when the arsenical was administered on Tuesday at 9:30 a. m., followed by the thiosulfate exactly one hour later. The arsenic excreted the first week totaled 17.88 mg., but the amount is incomplete, since the first day's specimen was not obtained. The second week's total was 9.47 mg., without obvious effect from the thiosulfate. The totals for the third and the fifth week were 39.81 mg. and 49.29 mg., respectively. As arsenic accumulates in the body and administration continues, there is apparent effort to remove proportionately larger amounts. This may be a consequence of the injections of thiosulfate, but the suppressing effect in the fourth week is very noticeable, only 3.81 mg. of arsenic being excreted in the five days following the injections (Monday's output is added to the previous week's total).

was terminated as unsatisfactory. In the light of later findings, it is unfortunate that the experiments were not completed.

Prepared ampules of sodium thiosulfate solution containing 1 Gm. of the drug were employed in these studies. Like Ayres and Anderson,[7]

7. Ayres, S., Jr., and Anderson, N. P.: Sodium Thiosulfate and the Elimination of Arsenic, J. A. M. A. **110**:886 (March 19) 1938.

we have never been convinced of the superiority of freshly dissolved sterile crystals. Although chemical deterioration (evidenced by precipitation of sulfur) is likely to occur in open containers, properly prepared ampules should not suffer in this regard.

TABLE 2.—*Urinary Output of Arsenic After Administration of Mapharsen and Sodium Thiosulfate*

Date	Volume of Urine, in Cc.	Urinary Excretion of Arsenic as As_2O_3		Medication
		Mg. per 100 Cc.	Total Mg.	
5/ 9	1,000*	0.01	0.10*	
5/10	850	0.40	3.40	0.06 Gm. mapharsen; 1 Gm. sodium thiosulfate one hour later
5/11	900	0.16	1.44	
5/15	1,200	0.05	0.60	
5/16	.....	....	....	
5/17	825	0.40	3.30	0.06 Gm. mapharsen; 1 Gm. sodium thiosulfate one hour later
5/18	1,700	0.08	1.36	
5/19	800	0.06	0.48	
5/22	1,350	Negative	Less than 0.10	
5/23	1,400	0.01	0.14	
5/24	1,500	0.01	0.15	None
5/25	1,300	0.03	0.39	
5/26	1,015	0.02	0.20	

* Record of twenty-four hour volume missing; results expressed per liter.

TABLE 3.—*Urinary Excretion of Arsenic After Administration of Sodium Thiosulfate*

Date	Volume of Urine, in Cc.	Urinary Excretion of Arsenic as As_2O_3		Medication
		Mg. per 100 Cc.	Total Mg.	
5/ 3	.....	....	....	1 Gm. sodium thiosulfate
5/ 4	1,000*	0.01	0.10*	
5/ 6	1,000*	0.02	0.20*	
5/ 8	1,000*	Negative	Less than 0.05*	1 Gm. sodium thiosulfate
5/ 9	1,000*	Barely detectable	Approximately 0.05*	
5/10	1,000*	0.02	0.20*	
5/11	500	0.01	0.05	
5/17	.....	....	....	1 Gm. sodium thiosulfate
5/22	1,175	0.008	0.09	None
5/23	1,180	0.005	0.06	
5/24	1,075	0.005	0.05	
5/25	800	0.01	0.08	
5/26	1,075	Negative	Less than 0.05	

* Record of twenty-four hour volume missing; results expressed per liter.

COMMENT

Although the beneficial effect of sodium thiosulfate in dermatologic practice is usually ascribed to augmented urinary excretion of arsenic, the findings of various investigators in this regard are contradictory.

Even Kuhn and Reese,[8] who offered proof of increased arsenic excretion after the administration of sodium thiosulfate, admitted that the decided increase is of short duration and cannot be maintained by subsequent doses of the thiosulfate.

In part, differences in results may be due to the procedures employed. Many of the most ardent American advocates of the theory of arsenic mobilization under thiosulfate therapy have a common origin, which is reflected in their method of expressing the results of laboratory analyses, viz., in terms of metallic arsenic per hundred grams of dry specimen (C. N. Myers). Under these conditions, the arsenic will vary not alone in its concentration in the body fluid tested but also in changes in the solid content. In blood the variation in total solids and water is strictly limited, but in urine wide differences exist. It is conceivable that urinary arsenic when computed per hundred grams of solids may not present the same picture as when the data are given in terms of twenty-four hour output. The more conventional system of expressing laboratory findings employs milligrams per hundred cubic centimeters for blood and milligrams per day for urine, the results being given either as arsenic or as arsenic trioxide (the former amounting to 75.7 per cent of the latter).

The most recent contribution to the literature of the Myers group is that of Ayres and Anderson.[7] They presented 49 cases of various dermatologic conditions in which arsenic was suspected of being a causative factor. In 8 per cent of these, there was failure to excrete arsenic before or after injection of sodium thiosulfate; in 12 per cent there was a decrease in the output of arsenic, and in 80 per cent an increase was demonstrated, which in some instances was very high (results expressed on the dry basis). Their subjects were not restricted or controlled in any way. They described the collection of specimens as follows:

> The patient is given a sterile quart glass jar with a glass top (in order that no metal which might possibly contain arsenic may come in contact with the urine) and is instructed to fill the jar with portions of each urination over a twenty-four hour period. When this is brought back he is instructed to empty his bladder, is given 1 Gm. of sodium thiosulfate in 10 cc. of sterile distilled water intravenously and is then instructed to urinate directly into a second jar until it is filled rather than to use samples over a twenty-four hour period.[7]

Although the clinician may feel that this casual collection of specimens suits his purpose, it is scarcely a scientific approach to the problem, regardless of how many patients are involved.

Since it is difficult to secure subjects who can be adequately controlled and to arrange for the extensive laboratory work, our cases have

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8. Kuhn, H. A., and Reese, H. H.: Sodium Thiosulfate in the Treatment of Metallic Intoxication, J. A. M. A. **85**:1804 (Dec. 5) 1925.

been reported for such enlightment as they may furnish. On the remote possibility that arsenic long deposited in the tissues might resist removal under the auspices of thiosulfate, it was deemed advisable to provide the subject with definite amounts of arsenic. Rather than hastening the exit of this element from the body, sodium thiosulfate actually suppressed its elimination in the urine. These findings confirmed the observations of Mattice and Weisman,[2] only more dramatically, since the quantity of arsenic involved was much larger.

It is agreed that the most suitable subjects for study would be those with frank postarsphenamine dermatitis, but it would be necessary to follow the progress of the ailment with and without thiosulfate. Such subjects are not likely to be available except for casual rather than thorough testing. Unless thiosulfate only mobilizes arsenic which has been deposited in the skin in amounts sufficient to produce characteristic symptoms, augmented output should be demonstrable in the case of any subject who has stored this element anywhere in the body. The ubiquitous use of arsenical compounds in Western civilization argues against the possibility of an adult having no arsenic in his body. Actually, the chances of "contamination" of the subject are so great as to necessitate extreme precautions. Many investigators reporting the role of thiosulfate showed evident lack of thorough control of the multitudinous factors which could have some bearing on the findings. As a consequence, much of the literature is scientifically meaningless.

The clinical use of sodium thiosulfate is based on foundations which apparently cannot be accepted unequivocally. The comment of a recognized authority in an outstanding American institution reflects the uncertainty which, though largely inarticulate, is widespread throughout the ranks of dermatology: "We use sodium thiosulfate only in very early phases of arsenical dermatitis, that is, during the first two or three days, hoping that it does tend to increase the arsenical output."

SUMMARY

We have obtained no evidence that sodium thiosulfate injected intravenously mobilizes arsenic from body stores for urinary elimination. Therefore, the administration of sodium thiosulfate for clinching the diagnosis of arsenical dermatitis is not warranted.

When an arsenical and a thiosulfate are injected within an hour of each other, in the order stated, the urinary excretion of the arsenic is decidedly suppressed.

This problem was planned under the direction of Dr. Milton A. Bridges. The intern and nursing staff of Riker's Island Hospital gave assistance.

NATURE OF THE EXCITANT OF POISON IVY DERMATITIS

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During the past half-century numerous attempts have been made to isolate and identify the toxic principle of the various species of the three leaflet, white-fruited forms of the Rhus family, scientifically known as Rhus radicans (Rhus toxicodendron), Rhus quercifolia, Rhus microcarpa, Rhus rydbergii and Rhus diversiloba, etc., and commonly known as poison ivy or poison oak. Some botanists still contend that slight differences exist between these many forms, basing their contentions on whether the habit of growth of the plant is chiefly erect or climbing and on variances in the texture, pubescence and degree of lobing of the leaflets. Since all these variations can be observed in the same species under different climatic, soil and other field conditions, conservative toxonomists now agree that the numerous species of poison ivy are identical. I have patch tested ivy-sensitive persons with acetone-diluted oleoresins extracted from the many so-called species of ivy collected in different sections of the United States and have found the antigenic potencies of the various specimens to be identical.

The oleoresin of the poison ivy vine or shrub has usually been considered the dermatitis-producing portion of the plant. Pfaff,[1] in 1897, obtained by alcoholic extraction of the branches and leaves of the poison ivy vine a toxic, nonvolatile oil, which he termed toxicodendrol. Acree and Syme, in 1906, employing ether as a solvent, obtained a toxic material designated by them toxicodendrin and considered a complex glycoside. McNair, in 1916, obtained from the poison oak (poison ivy) of the Pacific coast a highly antigenic oil, which he called lobinol. Majima and his co-workers and Toyama from 1916 to 1922 worked with alcoholic extracts of the sap of the Japanese lacquer tree (Rhus vernicifera). The yellowish toxic oil which they isolated was designated "urushiol." In 1934 Hill, Mattacotti and Graham extracted poison ivy of the eastern United States. They also obtained a yellow, toxic oil, which they concluded was identical with urushiol.

Dr. J. H. Black gave many valuable suggestions.

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1. For complete bibliography see: Hill, G. A.; Mattacotti, V., and Graham, W. D.: The Toxic Principle of Poison Ivy, J. Am. Chem. Soc. **56**:2736 (Dec.) 1934.

In attempted desensitization to poison ivy, 28 ivy-sensitive persons were given single large or toxic doses of ivy oleoresin by mouth. Symptoms of intolerance, in order of frequency, were pruritus ani et vulvae, flare-up of healed patch test sites, generalized toxic dermatitis medicamentosa with predilection for areas previously affected by ivy dermatitis, pompholyx-like eruptions of the hands and feet and mild gastric upsets. Examination of the vulvae of the female volunteers, all of whom complained of extreme pruritus vulvae, showed intense erythema of the urethral orifice and surrounding area. This finding indicated that the dermatitis-producing excitant of the poison ivy oleoresin was excreted in the urine. Attempts were then made to determine whether this excitant was an oil or some urine-soluble fraction of the oil.

Water, saline solution and urine extracts of ivy leaves were prepared by adding the separate extracting fluids to equal volumes of triturated dried ivy leaves. The mixtures were allowed to stand for twenty-four hours at room temperature and were then passed through ordinary filter paper to remove plant particles. Patch tests with these various extracts routinely gave negative or doubtful reactions in ivy-sensitive persons. It had been previously proved that ivy oil obtained from the roots during the dormant period of the plant was two to ten times as potent as a similar quantity of oil extracted from the leaves at various periods of plant growth. Patch tests with water extracts of roots grubbed during the winter and passed through one layer of filter paper evoked strongly positive (vesicular) reactions in the same persons. Several passages through filter paper rendered these extracts nonantigenic. This decided variation in potency between specimens of oil extracted from the roots and from the leaves is apparently due to the large amounts of waxes, gums and waste products found in the latter. These experiments indicated that the dermatitis-producing excitant when found in water, saline solution and urine extracts of the plant was chiefly in suspension, as it could be removed by passage through ordinary filter paper.

A water extract of roots was then passed through gauze to remove contaminating particles of the plant. Patch tests with portions of this extract produced violent reactions in ivy-sensitive persons. After passage through two layers of ordinary filter paper, which removes a high percentage of the antigenic agent, the extract was centrifuged at high speed for thirty minutes. Material collected from the upper, middle and lower portions of this centrifuged specimen evoked doubtful or mildly positive reactions of equal intensity in ivy-sensitive subjects. This further indicated that the greater part of the ivy excitant contained in water extracts was in suspension. That a small portion was in solution is also indicated by the mild but equal reactions which were evoked when various portions of the centrifuged specimen were used for the testing material.

A pint jar was filled with root bark, which contains most of the oil of the root. The bark was covered with water and allowed to stand for forty-eight hours. The water extract was then passed through filter paper, mixed with equal parts of ether and thoroughly agitated, and the water was removed by means of a separatory funnel. The ether extract was then evaporated to dryness in a glass evaporating dish. A fine film remained after complete evaporation of the ether. Distilled water (1 cc.) was added to the dish. The film did not dissolve, and after thorough agitation this water was not antigenic by patch test for ivy-sensitive persons. Negative reactions to patch tests did not preclude slight solubility of the substance forming the film. The water was then evaporated by heating, since I had previously demonstrated that pure ivy oleoresins, antigenic urines and their watery dialysates, corn oil dilutions and watery suspensions of ivy oil lose no demonstrable amount of their dermatitis-producing potency through boiling over flame for from five to thirty minutes. Acetone (1 cc.) was then added to the dish and immediately assumed a straw color, through dissolution of the film. This acetone material was highly antigenic for ivy-sensitive persons but not for controls. Highly antigenic unfiltered water extracts of roots were then dialyzed through extraction thimbles. Patch tests with concentrated ether extracts of these watery dialysates gave doubtful to mildly positive reactions in ivy-sensitive subjects. These experiments indicate that the dermatitis-producing fraction of ivy oleoresin either is only slightly soluble in water or is so bound up in the oil that it is not easily separated by this agent.

I ingested 2 cc. of the 1 to 10 dilution of the ivy leaf oleoresin in corn oil. The approximate potency of this oleoresin was previously determined by the quantitative patch testing of persons of known sensitivity. After ingestion of this known dose, my urine and feces were collected for three days and extracted with ether. By employing quantitative patch tests with these extracts in subjects of known sensitivity, it was estimated that in a three day period approximately 30 per cent of the ingested dose was excreted in the urine and the remainder was eliminated in the feces. When an equal amount (10 cc. of a 1 to 50 dilution) of the oleoresin was injected intramuscularly, the percentages of the excitant found in the urine and feces were approximately the same as after ingestion of the oil. Traces of the ivy excitant could readily be demonstrated in the untreated urine of subjects taking small oral doses of the ivy oleoresin in attempted preseasonal desensitization. Patch tests with concentrated ether extracts of the urine of these persons evoked violent reactions. The urine of 1 patient who ingested massive doses of poison ivy oleoresin contained so much of the ivy excitant that a drop of her urine placed on the skin

of ivy-sensitive subjects and allowed to dry caused typical vesicular reactions. Patch tests with concentrated ether extracts of this urine elicitated extreme reactions. The results of repeated control tests on nonsensitive persons were routinely negative. The dermatitis-producing fraction of the ivy oleoresin therefore proved freely soluble in urine if previously separated from the oleoresin by passage through the body.

Being nonsensitive to ivy, I ingested an ounce (28 cc.) of the 1 to 10 dilution of an ivy oleoresin extracted from roots dug during the winter. Patch tests with untreated urine collected as late as seventy-two hours after ingestion of this large dose and repeatedly passed through ordinary filter paper evoked positive reactions in ivy-sensitive persons. Ether extracts of the daily urine output showed, by means of patch tests, traces of the ivy excitant present in the specimen through the fifth day. Patch tests with similar extracts of urine collected after the fifth day routinely gave negative reactions. Antigenic urines stored in the ice box or at room temperature routinely lost their potency after one month to six weeks. These experiments further indicate that the ivy excitant is freely soluble in urine.

At intervals of from six to eighteen hours after ingestion of this large oral dose 75 cc. of my blood was collected. After coagulation the blood serum was agitated with an equal volume of ether. The ether extract of the serum was partially evaporated, kept at freezing temperature for one hour and filtered to remove fats. Patch tests with this ether extract gave typical vesicular reactions in ivy-sensitive persons.

A portion of my urine specimen was centrifuged at high speed for thirty minutes. Patch tests with 1 drop each of the upper, middle and bottom layers of this centrifuged specimen gave equally severe reactions, proving that the antigenic material in the urine was in solution and not in suspension. This further indicated that the antigenic material was not an oil but some urine-soluble fraction contained in the oleoresin.

A portion (3 ounces [85 cc.]) of my first twenty-four hour urine specimen was dialyzed through both cellophane and parchment sacks. Patch tests with the watery dialysates and their concentrated ether extracts gave positive reactions in ivy-sensitive persons. Control tests gave negative reactions. Since oils are not dialyzable, these results indicate the dermatitis-provoking excitant to be a dialyzable fraction of the oleoresin.

One cubic centimeter of the ivy oil was vigorously shaken in 8 ounces (227 cc.) of water, and this watery suspension was similarly dialyzed. Patch tests with the untreated and concentrated ether extracts of these dialysates produced negative reactions in ivy-sensitive persons. The dermatitis-producing fraction of the oleoresin is so firmly bound in the oil that it is insoluble or only slightly soluble in water in this chemical

state. After separation of this fraction from the oil by passage through the human body it becomes soluble in water and urine, since highly antigenic urine can be rendered completely nonantigenic by repeated dialyzation through cellophane into water.

CONCLUSION

My experiments indicate that the dermatitis-producing principle of poison ivy is not an oil, as previously described, but a dialyzable fraction of the oleoresin soluble in water and urine.

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PATHOLOGY OF SCHISTOSOME DERMATITIS

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Since Cort [1] showed that a dermatitis contracted from the water on bathing beaches in northern Michigan was caused by the penetration of certain larval trematodes (schistosome cercariae) into the skin, this disease, schistosome dermatitis, has attracted increasing attention, particularly in the lake regions of the North-Central part of the United States, where tourist trade has been affected. Schistosome dermatitis, commonly called "swimmer's itch" or "water rash," has been most extensively investigated in Wisconsin,[2] Michigan [3] and Manitoba.[4] Results and conclusions of these combined investigations which relate to this paper may be summarized briefly as follows:

1. All or most of the dermatoses directly ascribable to contact with water while bathing in the areas investigated are caused by the penetration of schistosome cercariae into the skin. No other cause for the cases of so-called "swimmer's itch" could be definitely shown. While five or more dermatitis-producing cercariae have been reported in this country,

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From the Department of Zoology, University of Wisconsin, and the Wisconsin State Board of Health.

The study was aided in part by a grant from the Wisconsin Alumni Research Foundation.

1. Cort, W. W.: Schistosome Dermatitis in the United States (Michigan), J. A. M. A. **90**:1027-1029 (March 31) 1928.

2. (*a*) Edwards, A. C., and Brackett, S.: A "Swimmer's Itch": Schistosome Dermatitis, Wisconsin M. J. **37**:543-547 (July) 1938. (*b*) Brackett, S.: Methods for Controlling Schistosome Dermatitis, J. A. M. A. **113**:117-121 (July 8) 1939; (*c*) Studies on Schistosome Dermatitis: V. Prevalence in Wisconsin, Am. J. Hyg. (Sect. D) **31**:49 (May) 1940.

3. (*a*) Cort, W. W.: Studies on Schistosome Dermatitis: I. Present Status of the Subject, Am. J. Hyg. **23**:349-371 (March) 1936. (*b*) Talbot, S. B.: Studies on Schistosome Dermatitis: II. Morphology and Life History Studies on Three Dermatitis-Producing Schistosome Cercariae, C. Elvae Miller, 1923, C. Stagnicolae, n. sp. and C. Physellae n. sp., ibid. **23**:372-384 (March) 1936. (*c*) Cort, W. W.; McMullen, D. B.; Olivier, L., and Brackett, S.: Studies on Schistosome Dermatitis: VII. Seasonal Incidence of Cercaria Stagnicolae Talbot, 1936, in Relation to the Life Cycle of Its Snail Host, Stagnicola Emarginata Angulata (Sowerby), ibid., to be published.

4. (*a*) McLeod, J. A.: Studies on Cercarial Dermatitis and the Trematode Family Schistosomatidae in Manitoba, Canad. J. Research (Sect. D) **18**:1-28 (Jan.) 1940. (*b*) Swales, W. E.: Schistosome Dermatitis in Canada: Notes on Two Causative Agents and Their Snail Hosts in Manitoba, ibid. **14**:6-10 (Jan.) 1936.

three, namely, Cercaria stagnicolae, Cercaria elvae and Cercaria physellae, account for most of the outbreaks.

2. The causative organisms as well as the disease are widespread in the lake regions of the North-Central states and neighboring Canadian provinces. Not every lake in these areas is troubled, since the cercariae must develop in certain snails before emerging into the water, and the snail hosts are not uniformly distributed. Suitable snail hosts are absent from many lakes.

3. Outbreaks of the disease occur most commonly in July and August, although they are occasionally encountered earlier or later in the summer.

4. Not all persons are susceptible. Children may be more commonly affected, probably because their activities in shallower water bring them in contact with more cercariae, and in addition they may be more sensitive than adults.

5. The clinical picture is about as follows: A few minutes after emerging from infected waters a tingling sensation is felt in the exposed parts of the body. Soon pinpoint-sized red macules may be observed. The tingling may then subside, and nothing is experienced for a number of hours, when a distinct itching arises and the macules enlarge to form firm, discrete papules from 2 to 5 mm. in diameter, which are red at first and may be surrounded by a halo of hyperemia. Occasionally the lesions become pustular. Secondary infections may cause certain variations. In very susceptible persons or in persons with severe infections some pain and swelling may occur and urticarial wheals may arise soon after the cercariae invade. The lesions usually fade within a week, although a red or brown stain may persist longer. No difference was noted in the lesions caused by the different species of cercariae. The extremities are most frequently involved, and the face and neck are usually spared. The disease may be differentiated from dermatoses caused by other parasites.[2a]

6. No evidence has appeared that these schistosomes are able to set up a systemic infection in human beings. In fact, all evidence is to the contrary. Cort suggested that the dermatitis seen in human beings is the manifestation of a defense mechanism against an organism that has accidentally penetrated into the wrong host species.

7. Where the disease occurs extensively it may be feasible to eliminate the snail hosts, which can be killed with certain copper compounds. If this is not practicable, the severity of attacks may be greatly reduced if individual bathers rub exposed parts of the body vigorously with a towel immediately on leaving infected water. Apparently the cercariae do not penetrate extensively until the water begins to evaporate on the surface of the skin. Rubbing with the towel crushes them before they have had a chance to enter.

The only information in the literature concerning the activity of the cercariae after they invade the skin and the response of the tissues to the organisms is in a report of some investigations in Europe by Vogel.[5] He experimentally infected himself and volunteers with Cercaria ocellata, a European cercaria closely related to the schistosome cercariae of this country and possessing essentially the same dermatitis-producing properties. Twenty-four hours later he removed some of the tissue for histologic studies. Eleven cercarial bodies were found in this tissue, which was sectioned serially. These were lying in tunnels in the epithelial layer and were still easily recognized. Since Vogel's study did not demonstrate the final fate of the cercariae in human skin, several biopsies were made during the course of the Wisconsin investigations, with the hope of determining this matter. The results of the histologic studies of the serially sectioned material are discussed in this paper.

METHOD

The inner surface of the forearm was chosen as the site for the experimental lesions and for the removal of specimens for biopsy. The first set of lesions was produced with C. elvae, and the biopsy was made about fifty hours after exposure. An elliptic piece of tissue about 2.5 cm. long and 1 cm. wide was removed. A second set of lesions, produced by C. stagnicolae, was excised about twenty-nine hours after the cercariae had entered. This piece of tissue was about twice the size of the first. It was taken from an area within a few centimeters from where the other specimen was removed. Both pieces of tissue were fixed in diluted solution of formaldehyde U. S. P. (5 per cent) immediately after removal. The tissues were sectioned serially about 6 microns in thickness and stained with hematoxylin and eosin. All sections of both sets of material were first inspected with lower powers of the microscope in order to determine the distribution of the cercariae and lesions. After this, many of the more important sections were studied carefully with higher powers of the microscope for histologic details.

HISTOLOGIC PICTURE

Twenty-Nine Hour Sections.—Numerous burrows in the epithelium and evidence of an acute inflammatory reaction characterized the tissues twenty-nine hours after the invasion of the cercariae, although it was not possible to find any evidence of the cercarial bodies themselves. These burrows were traced from section to section and in several cases from a point where they entered on the surface to a place where they ended blindly, still within the malpighian layer. No evidence was seen which indicated that the cercariae had gone beyond this layer into the deeper tissues. For the most part the lesions were almost completely filled with neutrophils, which in places formed intraepithelial abscesses (fig. 1 *A*). Generalized edema in the vicinity of the burrows and in the cutis and the

5. Vogel, H.: Hautveränderungen durch Cercaria ocellata, Dermat. Wchnschr. **90**:577-581 (April 26) 1930.

subcutaneous tissue below them was pronounced. Lymph vessels were dilated and easily seen (fig. 1 *B*). The edematous condition was extensive in several places above the burrows, so that a considerable amount of fluid was concentrated just under the cornified layer to form the vesicles that were seen grossly. It seemed to be characteristic of the burrows that their walls were definite and sharp in outline. For the most part the epithelial cells surrounding them did not seem to be particularly changed.

It is interesting to compare the appearance of these twenty-nine hour sections with Vogel's observations on twenty-four hour sections. The most striking difference is that distinct cercarial bodies were seen by Vogel, while none were present in my sections. There seemed to be

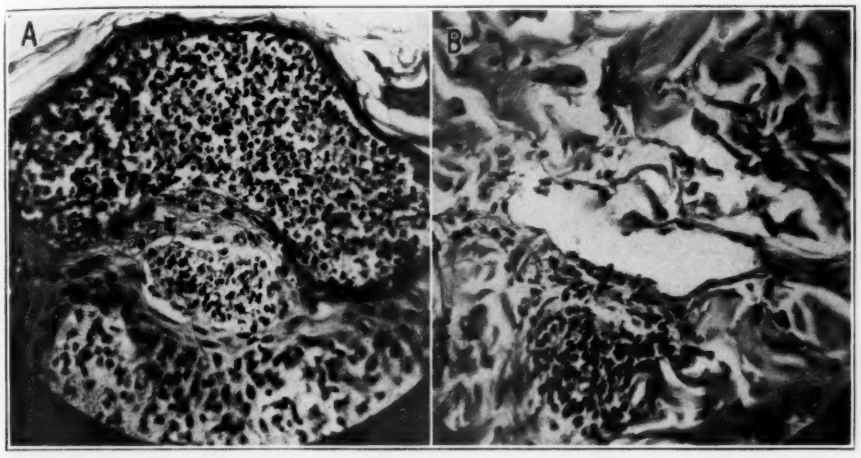

Fig. 1.—Twenty-nine hour sections (× 123). *A*, an extensive infiltration of neutrophils in the cercarial burrow and overlying lesion to form an intraepithelial abscess. *B*, a dilated lymph vessel in the cutis.

no significant difference in the depth of the penetration in either set of tissues. Vogel described some changes in the epithelial cells surrounding the canals, such as a dissolution of the intercellular material and consequent loosening of the tissues, vacuolation of the cytoplasm and pyknosis of the nuclei. His photographs indicate, however, that these changes were not extensive. He noted some collection of fluids and evidence of invasion of neutrophils and lymphocytes into and around the canals. This infiltration in Vogel's sections seems not to be as intense as that in mine. There was moderate edema in the cutis of the tissue studied by Vogel but no pronounced cell infiltration. Vogel interpreted the changes in the tissue as being due chiefly to the histolytic action of the secretions of the penetration glands of the cercariae (fig. 2).

Fifty Hour Sections.—Again burrows were easily found in sections of lesions at this stage, but extensive search failed to reveal any cercarial bodies. The burrows were still confined to the epithelial layer, and in following some of them from section to section there was seen no evidence that the cercariae had penetrated into the deeper tissues (fig. 3, *A, B* and *C*). The channels were filled in places with loosely arranged debris and with some recognizable neutrophils and lymphocytes. In

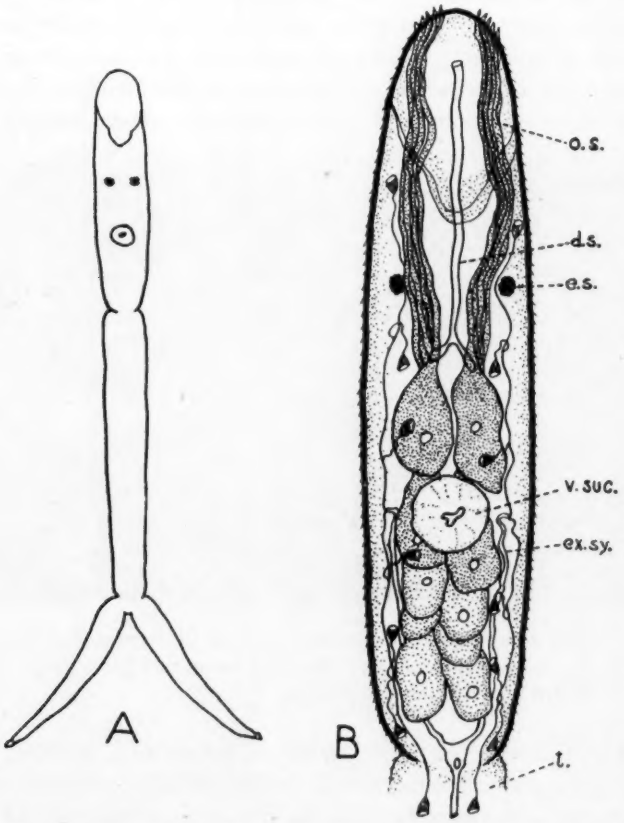

Fig. 2.—*A*, outline diagram of C. elvae, showing the relation of the body to the characteristically forked tail, which is lost before the cercaria penetrates into the skin of a host. *B*, diagrammatic drawing of body of C. elvae, showing the five pairs of large unicellular penetration glands: *o.s.*, the oral sucker; *d.s.*, digestive system; *e.s.*, pigmented eye spots; *v. suc.*, ventral sucker; *ex. sy.*, excretory system, and *t.*, the base of the tail.

other places the burrows were completely empty or showed evidence of having contained a more or less clear fluid. Above some of the burrows were edematous infiltrations between the malpighian layer and the cornified tissue. The acute inflammatory reaction seemed to have subsided considerably, but, in contrast to the picture in the earlier

sections, a striking invasion of eosinophils had occurred. The latter cells were present in large numbers in the subcutaneous and dermal tissues and formed a large percentage of the cells that could be identified within the lumens of the burrows and in the superficial edematous patches. Many of the tunnels at this stage were characterized by their

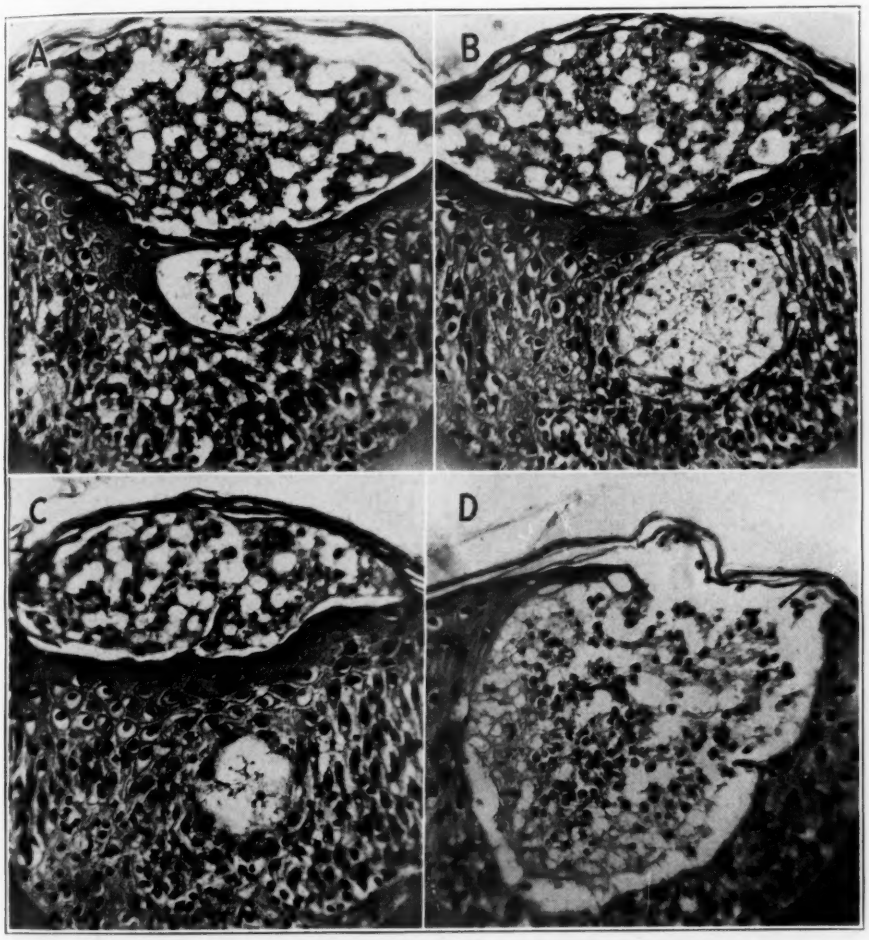

Fig. 3.—Fifty hour sections (× 123). *A*, *B* and *C*, successive stages showing the horizontal movement of a cercaria in the epithelium. The beginning of the burrow where the cercaria has just entered the malpighian layer is seen in *A*. *B* shows a cross section of the burrow at about the center of its length, and *C* shows its termination. *D*, a large burrow. Eosinophils form a large part of the cellular contents of this lesion.

large diameters, some being four or more times the diameter of a cercaria (fig. 3 *D*). The large size of these tunnels may have been due to the histolytic action of the penetration glands of the cercaria.

COMMENT

Some of the differences between Vogel's material and mine have already been pointed out. It seems worth while to consider these in greater detail in an attempt to explain or correlate them if possible. At first the differences seemed almost qualitative, since Vogel found cercariae and I did not. On further analysis, the differences may be shown to be quantitative instead. I am convinced that cercariae were absent from my material not because they had gone on into deeper tissues where they could have been overlooked but because they had been destroyed, even as soon as twenty-nine hours after they had entered. If this assumption is correct, then it is only necessary to show that some persons respond more rapidly to the invasion of dermatitis-producing schistosome cercariae than do others, in order to explain the differences in the observations of Vogel and of myself. It has already been pointed out that there seemed to be evidence of a much more acute inflammatory reaction and of more extensive neutrophil invasion in my twenty-nine hour section than in Vogel's twenty-four section. This is hardly surprising, in view of the general evidence of individual variations which occur in other reactions. Specifically I have seen that the clinical manifestations of schistosome dermatitis may vary somewhat in different persons.

At this point it is significant to point out that I have been exposed to schistosome cercariae both experimentally and naturally many times each summer since about 1934 and that each year my reaction has been increasingly pronounced. At the outset the lesions were mild and caused little trouble, but by the time the biopsies were made in 1938 and 1939, penetrating cercariae would cause an almost immediate urticarial response. Within half an hour the area of penetration would be swollen, and often within twelve hours inflamed lymph vessels could be traced for more than half the length of the forearm. While Vogel did not give any evidence in his paper which would indicate the previous history of the person from whom he obtained his material, it is probable, judging from his descriptions, that it was someone who had had little or no previous contact with the organisms and who was apparently not unusually sensitive to them. From this evidence, then, it may be safe to conclude that the differences seen in the two sets of material are due to the different rates in which the tissues of the two subjects responded to the invasion of the cercariae. It seems that these two reports are good evidence that the cercariae are destroyed in the epithelial layers of the skin and that different persons react at different rates. Also, it is suggested that the speed of response may be increased in a person who has had previous contact with the specific organisms.

Assuming that the cercariae had not been destroyed in Vogel's twenty-four hour sections simply because the defense mechanism, in an apparently less responsive host, had not come into action as rapidly as in my experiments and that they would have been destroyed eventually, the following conclusions may be drawn concerning the course of schistosome dermatitis.

The cercariae penetrate into the epithelial layer of the skin but no deeper, although they may progress for a while horizontally in this layer. An acute inflammatory reaction results, and the cercariae are destroyed. Edema occurs at this time, which produces the lesions that are observed clinically. Following the neutrophil and lymphocyte invasion and destruction of the cercariae, there is an extensive invasion of all the surrounding tissues by eosinophils. It is assumed from clinical observations that the course from then on is one of recovery.

Some of the aforementioned evidence suggests that the immunologic phenomena associated with schistosome dermatitis might be well worth investigating. Only a few reports in the literature have a direct bearing on this question, and they are scanty. Culbertson [6] described an antagonistic action of the normal serums of vertebrates against cercariae. He showed that against C. stagnicolae human serum showed a titer of 1 : 24, rat serum showed a titer of 1 : 48, and duck serum had no effect. The normal definitive host of this cercaria is not yet known, but other evidence suggests that it is likely some bird, a fact which fits readily enough with this observation of Culbertson's. Unfortunately, Culbertson did not discuss the source of his human serum; so the reaction of the person toward actual invasion by the schistosome cercariae is not known, but one can only conclude that the serum used did have a destructive action on the cercariae. Cort [3a] reported a suggestive but brief experiment. Cutaneous tests with antigen obtained from the cercariae of Schistosoma mansoni were tried on about 20 persons in his laboratory in Baltimore. Of the whole group he alone gave a positive reaction. Since he was the only one who had a history of schistosome dermatitis, the positive reaction was attributed to previous exposure to the dermatitis-producing schistosome cercariae. These two reports combined with clinical observations and the histologic evidence given in this paper indicate that human beings possess naturally a mechanism that results in the destruction of these dermatitis-producing schistosome cercariae which accidentally penetrate into the skin and that previous contact may render the mechanism more rapidly responsive.

At present it is not possible to explain the so-called "immune" condition in certain persons who do not show a reaction after contact with

6. Culbertson, J. T.: The Cercaricidal Action of Normal Serums, J. Parasitol. **22**:111-125 (April) 1936.

these cercariae. Either the cercariae find it impossible or unattractive to enter the skin or they may elicit no response at all while in the tissues of some persons. In view of the information contained in this paper, the latter proposition seems unlikely, however.

Further work along this line will undoubtedly enlighten the question of the nature and activity of the defense mechanisms in schistosome dermatitis.

SUMMARY

Sectioned biopsy specimens from lesions of patients with schistosome dermatitis were studied, and the histologic picture is described. The dermatitis-producing schistosome cercariae apparently were destroyed in the epithelial layer of the skin and did not reach the deeper tissues. There was an acute inflammatory response to the presence of the cercariae, with pronounced edema and extensive early infiltration of neutrophils and lymphocytes. Later, extensive invasion of eosinophils occurred. Clinical evidence suggested that recovery then follows rapidly.

Members of the surgery and pathology departments of the Wisconsin General Hospital assisted in preparing the material for study. Dr. E. A. Birge Jr., and Dr. Nellie Bilstad gave helpful suggestions concerning interpretations.

XANTHOMA TUBEROSUM AND MYXEDEMA

REPORT OF A CASE

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AND
L. H. WINER, M.D.
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As early as 1918 Luden[1] reported high cholesterol values, over 200 mg. per hundred cubic centimeters, in the blood of patients with myxedema. Mason, Hunt and Hurxthal,[2] studying the cholesterol content of the blood in patients with hyperthyroidism and hypothyroidism, observed that in hyperthyroidism there was no relation between the basal metabolic rate and the cholesterol content of the blood. However, they admitted that hyperthyroidism tends to diminish the blood cholesterol. In hypothyroidism they found an increase in the cholesterol content of the blood proportional to the decreased metabolic rate. They stated that true myxedema is accompanied by a high cholesterol content of the blood and that the cholesterol value is the important guide in the treating of patients with hypothyroidism. Low basal metabolic rates, without clinical evidence of myxedema, they noted, were accompanied by normal cholesterol values.

Rowland,[3] in listing the lipid constituents of the blood, included three groups of compounds:

(1) The phosphatides: nitrogen and phosphorus compounds, such as lecithin and cephalin. The normal content of lecithin is 250 to 300 mg. per hundred cubic centimeters of blood.

(2) The cerebrosides: nitrogen compounds free of phosphorus.

From the Department of Dermatology and Syphilology, University of Minnesota Medical School, Dr. H. E. Michelson, Director, and the Department of Dermatology and Syphilology, Minneapolis General Hospital, Dr. S. E. Sweitzer, Chief.

1. Luden, G.: Studies on Cholesterol: V. The Blood Cholesterol in Malignant Disease and the Effect of Radium on Blood Cholesterol, in Collected Papers of the Mayo Clinic, Philadelphia, W. B. Saunders Company, 1918, vol. 10, pp. 470-485.

2. Mason, R. L.; Hunt, H. M., and Hurxthal, L. M.: Blood Cholesterol Value in Hyperthyroidism and Hypothyroidism: Their Significance, New England J. Med. **203**:1273-1278 (Dec. 25) 1930.

3. Rowland, R. S.: Anomalies of Lipid Metabolism, in Christian, H. A., and Mackenzie, J.: Oxford Medicine, New York, Oxford University Press, 1921, vol. 4, pt. 1, p. 214.

(3) The sterols: nitrogen-free, phosphorus-containing compounds, such as cholesterol, fatty acids and their combination to form esters; also neutral fats and soaps. The normal cholesterol content of the blood is 120 to 180 mg. per hundred cubic centimeters of blood.

Montgomery and Osterberg [4] listed the lipids normally found in the plasma as follows: Total cholesterols amounted to 160 to 200 mg. per hundred cubic centimeters, of which the cholesterol esters constituted about 70 per cent. The normal value for lecithin was 200 to 250 mg. and the fatty acids totaled 335 to 350 mg. per hundred cubic centimeters of plasma. The total lipoid content averaged from 500 to 550 mg. per hundred cubic centimeters of plasma.

Thannhauser and Magendantz [5] classified xanthomas and reported on a physiologic study of 22 cases. They divided xanthomatosis into three main groups: (1) primary essential xanthomatosis, including the primary hypercholesteremic types, normal cholesteremic types and a combination of the hypercholesteremic and normal types, (2) secondary xanthomatosis due to lipemia and (3) localized xanthoma cell formation in true tumors. They discussed the physiology of hepatic disease associated with xanthomatosis, diabetes mellitus and xanthomatosis and the resultant diabetes insipidus following involvement of the pituitary and tuber cinereum by an infiltrate of xanthoma. They concluded that essential xanthomatosis is a cellular disease of the reticulum cells, caused by an intracellular disorder of their cholesterol metabolism.

Schaaf [6] has shown that for the production of xanthoma the disturbance of lipoids in the blood need not be a permanent one. It could have been present during the formation of the xanthoma, after which the normal condition of the blood was restored.

Montgomery,[7] presenting a working classification of cutaneous xanthomas, listed ten groups and the characteristics of each, both clinically and microscopically. He included in one of these groups xanthoma due to hepatic disease, which was characterized by lesions predominantly on the palms. He also listed xanthomas associated with cardiovascular disease, diabetes mellitus and the involvement of the pituitary region by xanthomatous deposits, with the resultant diabetes insipidus.

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4. Montgomery, H., and Osterberg, A. E.: Xanthomatosis: Correlation of Clinical Histopathologic and Chemical Studies of Cutaneous Xanthoma, Arch. Dermat. & Syph. **37**:373-402 (March) 1938.

5. Thannhauser, S. J., and Magendantz, H.: The Different Clinical Groups of Xanthomatous Diseases: A Clinical Physiological Study of Twenty-Two Cases, Ann. Int. Med. **11**:1662-1746 (March) 1938.

6. Schaaf, F.: On the Experimental Production of Xanthomas in Laboratory Animals, J. Invest. Dermat. **1**:11-30 (Feb.) 1938.

7. Montgomery, H.: Cutaneous Xanthomatosis, Ann. Int. Med. **13**:671-676 (Oct.) 1939.

Neither Thannhauser and Magendantz nor Montgomery mentioned the association of myxedema with xanthomatosis. Fahr [8] stated that he was unable to cite from his own experience or to find in the literature the association of xanthomatosis with myxedema.

REPORT OF CASE

History.—Mrs. K. L., a 44 year old white housewife, was first seen Dec. 7, 1939, complaining of melancholia, hoarseness and yellow discoloration of certain parts of her skin. In July 1936 she first noticed a reddish discoloration of the palms, especially the left. In December 1938 she noticed that yellow transverse ridges began to form along the natural folds of the fingers and palms. Later the feet became involved in the same manner. At that time her menstrual periods became irregular and she became more melancholic. She also noticed that the skin of the entire body had become dry and scaly, and yellowish tumors appeared on the skin of the knees and feet.

Physical Examination.—Examination in December 1939 showed an apathetic, fairly well nourished woman. Her voice was hoarse, her hair dry and coarse and the skin of her entire body dry and scaly. The blood pressure was 120 systolic and 80 diastolic, and there was a soft systolic murmur at the apex of the heart. The pulse rate was 64. The skin was especially dry and scaly on the dorsal surface of the hands and forearms. Both palms were diffusely yellow, and there was an intensification of this color in the cutaneous creases, with the formation of variously sized nodules from 1 to 4 mm. in diameter. These nodules were within the epidermis and were not fixed to the underlying structures. There were also nodules on the knees (one on each, at the inferior border of the patella, 1.5 cm. in diameter). Other nodules from 3 to 6 mm. in size were arranged in groups on each achilles tendon. Tumors were also present at the base of the dorsum of the left great toe and at the base of the plantar surface of the right great toe. There was a narrow yellow band of infiltration 1 cm. long and 1 mm. wide on the lower conjunctiva of the right eye. The mucous membrane of the mouth was diffusely yellow. The tongue was enlarged and thickened. The remainder of the physical examination showed no abnormalities except for a dilated heart and electrocardiographic changes consistent with those found in myxedema. Examination of the vocal cords showed imperfect approximation due to partial loss of activity of the interarytenoid muscle, which was otherwise normal.

Laboratory Tests.—Roentgen examination of the skull and sella turcica showed no abnormalities.

The urine was yellow, slightly cloudy and alkaline and showed a faint trace of albumin. Its specific gravity was 1.009, and the microscopic study showed 1 to 4 pus cells and an occasional red blood cell per high power field.

The hemoglobin content of the blood was 50 per cent. The red cells numbered 2,530,000 and the white cells 5,200 per cubic millimeter. The differential blood count showed 55 per cent polymorphonuclear cells, 40 per cent lymphocytes, 2 per cent monocytes, 2 per cent eosinophils and 1 per cent basophils. The average mean diameter of the red blood cells was about 8.1 microns. The red blood cells showed moderate anisocytosis and slight polychromasia and poikilocytosis. The white blood cells appeared somewhat toxic, and the polymorphonuclear leuko-

8. Fahr, G. E.: Personal communication to the authors.

cytes showed toxic granulations and a few band forms. The blood picture suggested secondary anemia.

The basal metabolic rate was —28 per cent.

The chemical examination of the blood showed the icterus index to be 15 and the value for cholesterol 540 mg. per hundred cubic centimeters. The tests for serum protein showed globulin 2.6 Gm. and albumin 5 Gm. per hundred cubic centimeters, making a total of 7.6 Gm. per hundred cubic centimeters. The sugar tolerance test showed: 85 mg. of sugar per hundred cubic centimeters of blood during fasting; at one-half hour after ingestion of sugar, 115 mg.; at one hour, 155 mg.; at one and one-half hours, 140 mg.; at two hours, 112 mg., and at three hours, 120 mg. The cholesterol tolerance test showed: before the test, 565 mg. per hundred cubic centimeters of blood; two hours after the ingestion of choles-

Fig. 1.—Patient with xanthoma tuberosum and myxedema, showing nodular lesions in the flexor folds of the hands.

terol, 800 mg.; at four hours, 571 mg.; at eight hours, 835 mg., and at twenty-four hours, 835 mg.

The urine after the lactose tolerance test was normal and showed no galactose; at two hours there was a trace, and at three, four and five hours it showed no galactose. The ascorbic acid content of the blood was 2 mg. per hundred cubic centimeters.

Biopsies were made of three different areas of skin: skin from a tumor on the right toe and from one on the right knee and normal skin from behind the angle of the right mandible. Frozen sections were made and stained for fat with sudan III and nile blue. The sudan III in the sections from the tumor showed red globular deposits, which extended the entire distance from the epidermis down to the lower part of the cutis. Sections stained with nile blue showed only the neutral fats of the subcutis. Sections stained with hematoxylin and eosin showed areas of foam cells and Teuton giant cells adjacent to masses of mucinous degeneration, which lay between the connective tissue cells of the cutis.

Similarly stained sections of normal skin from behind the right mandible showed neither myxomatous degeneration nor xanthomatous deposits.

The microscopic diagnosis was xanthomatosis with myxedema.

Course.—The patient was given 3 grains (0.2 Gm.) of desiccated thyroid by mouth for one month, and on discharge from the hospital the dose was reduced to 1½ grains (0.1 Gm.) per day. Examination on April 29, 1940 showed that the patient had improved, in that the skin was soft, the hair was oily, the hoarseness was gone, the tongue was smaller and she was cheerful and mentally alert. Her basal metabolic rate was + 3 per cent, and the amount of cholesterol in the blood,

Fig. 2.—Low power photomicrograph of frozen section from a nodule of the great toe, stained with sudan III, showing fat deposits in the entire cutis.

260 mg. per hundred cubic centimeters. The tumors of the skin, although still present, were slightly smaller.

COMMENT

The patient filled all the requirements for a diagnosis of both myxedema and xanthoma tuberosum.

The diagnosis of myxedema was based on the clinical observations of melancholia, increased size of the tongue, hoarseness, dry skin and hair and the laboratory observation of lowered basal metabolic rate, increased cholesterol content of the blood, positive result of a cholesterol

tolerance test and the presence of myxedematous degeneration in the intercellular spaces of the cutis. The blood plasma had a lactescence due to the great increase of the cholesterol.

The diagnosis of xanthoma tuberosum was based on the clinical observations of yellow nodules present on the palms, knees, achilles tendon and plantar surfaces of both great toes. The histologic observation of foam cells containing globules which stained red with sudan III was conclusive evidence of xanthomatosis.

Fig. 3.—Low power photomicrograph of section from a lesion on the leg, stained with hematoxylin and eosin, showing myxomatous degeneration of the connective tissue.

No clinical or laboratory observations were suggestive of hepatic damage or diabetes mellitus. The facilities of our laboratory were not sufficient to make an analysis of all of the blood lipids.

SUMMARY AND CONCLUSIONS

We report a case of xanthomatosis and myxedema. The cholesterol content of the blood when we first saw the patient was 540 mg. per

hundred cubic centimeters; it went to 835 mg. during the cholesterol tolerance test and at present is 260 mg. When the patient was first seen, her basal metabolic rate was — 28 per cent; but after four months' therapy with desiccated thyroid, it was + 3 per cent. Although the clinical picture of myxedema has disappeared, that of the xanthoma tuberosum remains.

In this case, a combination of xanthomatosis and myxedema is reported, both conditions being demonstrated clinically and histologically. We have been unable to find a similar occurrence in the literature.

We believe that the myxedema occurred first, together with hypercholesteremia, and that after trauma the cholesterols of the blood were deposited in the skin.

FUNGISTATIC POWER OF BLOOD SERUM

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If living fungi can be disseminated hematogenously from a primary focus to other areas of the skin, they can give rise either to new areas of mycotic infections or to dermatophytids. It has been suggested that these secondary lesions would be more common were it not for the fact that contact of the fungi with the circulating blood reduces their virulence [1] and even causes their destruction.[2]

Per and Braude,[3] as well as Jessner and Hoffman,[1] have apparently demonstrated fungicidal antibodies in patients with fungous infections. Furthermore, Ayres and Anderson [2] maintained that only patients with trichophytids have such humoral fungicidal substances. Based on such a premise, Traub and Tolmach [4] used "convalescent serum" from patients with dermatophytids in the treatment of fungous infections. Lewis and Hopper [5] were unable to substantiate the findings of Ayres and Anderson.[2]

These rather isolated but more or less related observations are of great importance in the conception of the whole problem of immunity

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Read at the Third International Congress of Microbiology, New York, Sept. 6, 1939.

From the Laboratories and Service of Dr. Isadore Rosen, Mount Sinai Hospital, and from the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital.

1. Jessner, M., and Hoffman, H.: Der Einfluss des Serums Allergischer auf Trichophytonpilze, Arch. f. Dermat. u. Syph. **145**:187, 1923.

2. Ayres, S., Jr., and Anderson, N. P.: Inhibition of Fungi in Cultures by Blood Serum from Patients with "Phytid" Eruptions, Arch. Dermat. & Syph. **29**:537 (April) 1934.

3. Per, M. I., and Braude, R.: Contribution à la question de la valeur diagnostique et thérapeutique de la trichophytine au cours de la dermatomycose à la lumière des connaissances contemporaines sur l'allergie spécifique et l'immunité, Acta dermat.-venereol. **9**:1, 1928.

4. Traub, E. F., and Tolmach, J. A.: Treatment of Dermatophytosis with Trichophytin, Convalescent or Immune Serum, and Vaccines, New York State J. Med. **39**:305, 1939.

5. Lewis, G. M., and Hopper, M. E.: An Introduction to Medical Mycology, Chicago, The Year Book Publishers, Inc., 1939, p. 40.

and allergy in fungous infections. It has seemed to us that a more systematic and correlated study of the fungistatic and fungicidal power of the blood serum should be attempted. This paper embodies a series of experiments with this point in view.

METHOD

More than 50 blood specimens from 35 patients were studied. The fungistatic action of the blood serum was determined by means of the "pellicle method," as described in previous publications.[6] Trichophyton gypseum was the only micro-organism studied, not only because of its greater incidence as an infectious agent but also in order not to render the experiment more complicated. The same strain of T. gypseum was used throughout. The effects of the addition of 1, 10, 30, 50, 70 and 90 per cent concentration of blood serum to the Sabouraud bouillon on the growth of the micro-organism were studied. Adequate controls were made in each instance by comparing the growth of the fungi in plain Sabouraud bouillon.

The blood serum, in most instances, was used twenty-four hours after it was obtained, but it was placed in the ice box as soon as feasible after being drawn. In a few instances blood samples had to be transported for a few hours at approximately room temperature before the ice box could be reached. No preservative was added.

In using Sabouraud broth one has a convenient method of testing the fungistatic power of the various concentrations of blood serum on T. gypseum. It is possible to test the effects on this micro-organism because after the spores are inoculated in the depths of the fluid medium they first grow in the form of a cloudy suspension, thus growing under partially anaerobic conditions, and finally reach the top and form a pellicle. The degree of growth was measured both by the amount of subsurface flocculate and by the size of the surface pellicle.

If the different amounts of the serum were just added to the medium, there would result differing amounts of nutrient medium plus peptone in every tube. This factor of error was obviated in the following manner: The variable amounts of serum placed in the different tubes were diluted with distilled water until the fluid in each tube totaled 0.9 cc. To this was added 0.1 cc. of a tenfold concentration of Sabouraud broth, which had just been seeded with a measured quantity of the fungus being studied. In this way the final concentration of the medium was equal in each tube and always was equivalent to ordinary Sabouraud bouillon. The test tubes used averaged 1.25 cm. in diameter.

Complete coverage of the surface of the control tubes (containing only Sabouraud medium) by a pellicle took from six to nine days. The growth was more rapid in the summer. There was usually a good subsurface flocculate when there was a complete coverage of the surface by the pellicle, but in several instances when there was a wide pellicle completely covering the surface of the tube and even growing up on the sides of the tube there was only a moderate subsurface flocculate. In the tables a recording of 4 plus is made either when the pellicle completely covered the surface and showed a heavy subsurface flocculate or when there was a wide pellicle completely covering the surface with only a moderate amount of subsurface flocculate.

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6. (*a*) Peck, S. M., and Rosenfeld, J.: The Effects of Hydrogen Ion Concentration, Fatty Acids and Vitamin C on the Growth of Fungi, J. Invest. Dermat. **1**:237, 1938. (*b*) Peck, S. M.; Rosenfeld, H.; Leifer, W., and Bierman, W.: Role of Sweat as a Fungicide, Arch. Dermat. & Syph. **39**:126 (Jan.) 1939.

Certain strains of T. gypseum seemed to be more resistant to the fungistatic power of blood serum than were others. To avoid this possible factor of error the same strain which was isolated at the beginning of this study was used throughout the experiments. It was noted that with continued subculturing even this strain gradually became somewhat more resistant to the fungistatic power of a serum than more recently isolated strains.

The fungistatic power of the blood serum manifested itself as a retardation in the rate of growth and as a limitation in the degree of growth of the micro-organisms during the fourteen days of observation as compared to the controls. A blood serum having marked fungistatic power would in many instances so injure the micro-organism that even after fourteen days it still lacked the ability to cover the surface of the medium completely with a wide pellicle. A serum having only moderate fungistatic power would so affect the micro-organism that there was a distinct lag in the rate of growth, but if it were observed for a long enough period eventually it would completely cover the surface of the medium with a wide pellicle.

RESULTS

Experiment 1.—Fungistatic Power of So-Called Normal Serum.

Ten persons, 6 men and 4 women, with a negative trichophytin reaction and no clinical evidence of dermatophytosis comprised a so-called normal group. All were adults between the ages of 20 and 55. An attempt was made to weed out of this group those who might have previously had dermatophytosis. For this reason a relatively small number of patients could be used as controls.

Growth of the micro-organism in the various concentrations of serum in bouillon at the end of six to fourteen days was indicated by plus signs, as given in the tables. In order to grade the fungistatic power of the blood serums, the effect on the growth of T. gypseum at the end of six to fourteen days of a 70 or 90 per cent concentration of the serum in Sabouraud bouillon was evaluated as follows:

(1) Strongly fungistatic serum:	1 plus, 6 days; 1 or 2 plus, 14 days
(2) Moderately fungistatic serum:	1 or 2 plus, 6 days; 2 or 3 plus, 14 days
(3) Slightly fungistatic serum:	2 or 3 plus, 6 days; 4 plus, 14 days

In designating a serum as slightly fungistatic, growth of the fungi in the control tube had to show a greater acceleration of growth than the serum under investigation, even though growth in both was 4 plus at the end of fourteen days.

Table 1 summarizes the experiment. All experiments indicated that blood serum was fungistatic and not fungicidal. There was no instance of absolute inhibition of growth, even by the highest concentration of serum used. In only a few instances was the fungistatic power of the serum evident in concentrations below 30 per cent.

Only 1 blood serum (serum 9) showed absolutely no fungistatic power; 3 serums could be designated as slightly fungistatic; 2 could be rated as having moderate fungistatic power, and 6 could be designated as having strongly fungistatic power.

Two specimens of blood were taken from each of 2 patients in this series several months apart. It can be seen from table 1 that there was a variation in the fungistatic power of the blood samples from the same person. This variation in the fungistatic power of blood serum taken at various intervals from the same patients will be noted in subsequent experiments. It seemed to some extent to bear some relation to the time of year (summer or winter) when the blood was taken.

TABLE 1.—*Fungistatic Power* of Normal Serum (from Patients with No Evidence of Dermatophytosis and with Negative Trichophytin Reaction)*

Sex	Number	Growth Period, Days	Concentration of Blood Serum, per Cent						Control	Date of Inoculation
			1	10	30	50	70	90		
M	1	6	3+	3+	2+	2+	1+	±	3+	12/ 7/38
		14	4+	4+	4+	4+	1+	1+	4+	
M	2	6	2+	2+	1+	1+	1+	1+	2+	12/14/38
		14	4+	4+	4+	3+	3+	3+	4+	
M	3	6	3+	1+	1+	1+	1+	±	2+	12/28/38
		14	4+	3+	2+	2+	2+	1+	4+	
M	4	6	2+	2+	2+	2+	1+	1+	2+	12/30/38
		14	4+	4+	2+	2+	2+	1+	4+	
F	5	6	2+	2+	1+	1+	1+	±	2+	1/14/39
		14	4+	4+	2+	2+	1+	±	4+	
F	6	6	2+	2+	1+	1+	±	±	2+	1/14/39
		14	4+	3+	2+	2+	2+	1+	4+	
M	7	6	4+	4+	4+	2+	2+	2+	4+	2/ 6/39
		14	4+	4+	4+	4+	4+	4+	4+	
M	8	6	4+	3+	3+	2+	1+	1+	4+	5/ 4/39
		14	4+	4+	4+	4+	3+	2+	4+	
F	9	6	4+	4+	4+	4+	4+	4+	4+	5/23/39
		14	4+	4+	4+	4+	4+	4+	4+	
F	10	6	4+	4+	4+	4+	4+	3+	4+	5/23/39
		14	4+	4+	4+	4+	4+	4+	4+	
F	11	6	4+	4+	4+	4+	4+	3+	4+	5/23/39
		14	4+	4+	4+	4+	4+	4+	4+	
M	12	6	4+	4+	3+	3+	2+	2+	4+	6/30/39
		14	4+	4+	4+	4+	4+	4+	4+	

* 0, No growth; ±, slight growth below surface; 1+, moderate flocculate below surface; 2+, good subsurface growth, sometimes small colony on surface; 3+, partial covering of surface or as a band on side of tube with heavy subsurface flocculate; 4+, heavy growth of surface mycelium with heavy subsurface flocculate, or wide pellicle completely covering the surface and moderate subsurface flocculate.

Experiment 2.—Fungistatic Action of Blood Serum in Patients with Positive Trichophytin Reactions.

Table 2 gives an analysis of 18 patients, 15 men and 3 women, with positive trichophytin reactions of varying degrees. Among these were some with dermatophytids and others with clinical evidence only of dermatophytosis, while a third group showed a positive reaction to the trichophytin test but no clinical or microscopic evidence of fungous infection. They were grouped in the table under these three classifications. All were adults in approximately the same age group as the patients in table 1.

TABLE 2.—*Fungistatic Power* of Blood Serum (from Patients with Positive Trichophytin Reaction)*

Sex	No.	Growth Period, Days	Concentration of Blood Serum, per Cent: 1	10	30	50	70	90	Control	Date of Inoculation	Comment
M	1	6	3+	3+	3+	2+	2+	2+	3+	12/14/38	T. gypseum epidermophytosis; epidermophytids on hands
		14	4+	4+	4+	3+	2+	2+	4+		
F	2	6	2+	2+	2+	1+	1+	1+	2+	12/16/38	T. gypseum clinical epidermophytosis; plus epidermophytids
		14	4+	4+	4+	4+	4+	3+	4+		
M	3	6	2+	2+	2+	2+	1+	±	2+	12/30/38	T. gypseum epidermophytosis plus epidermophytids; persistent case; responded to injections of trichophytin
		14	4+	4+	3+	3+	2+	1+	4+		
M	4	6	3+	3+	2+	2+	2+	2+	4+	4/ 5/39	Epidermophytosis plus epidermophytids; positive trichophytin reaction
		14	4+	4+	4+	4+	4+	4+	4+		
M	5	6	4+	4+	4+	3+	3+	3+	4+	4/21/39	Acute epidermophytosis plus epidermophytids; strongly positive trichophytin reaction, positive microscopically
		14	4+	4+	4+	4+	4+	4+	4+		
M	6	6	4+	4+	4+	4+	4+	4+	4+	6/16/39	Clinical epidermophytosis plus epidermophytids; trichophytin reaction strongly positive
		14	4+	4+	4+	4+	4+	4+	4+		
F	7	6	4+	4+	4+	4+	4+	4+	4+	6/28/39	Epidermophytosis plus epidermophytids; trichophytin reaction strongly positive, positive microscopically
		14	4+	4+	4+	4+	4+	4+	4+		
M	8	6	3+	3+	3+	3+	2+	1+	3+	12/ 7/38	No clinical evidence of epidermophytosis; slightly positive trichophytin reaction
		14	4+	4+	4+	4+	3+	2+	4+		
M	9	6	3+	3+	2+	2+	1+	1+	3+	12/ 9/38	Clinical epidermophytosis
		14	4+	4+	4+	2+	2+	2+	4+		
M	10	6	3+	3+	3+	2+	1+	1+	2+	12/14/38	Epidermophytosis of groin and toes; markedly positive trichophytin reaction
		14	4+	4+	4+	4+	3+	3+	4+		
M	11	6	4+	4+	3+	3+	2+	2+	4+	2/15/39	Scaling between toes; eczema of hands; trichophytin reaction strongly positive
		14	4+	4+	4+	4+	4+	4+	4+		
M	12	6	4+	4+	4+	3+	2+	2+	4+	6/30/39	Epidermophytosis
		14	4+	4+	4+	4+	4+	4+	4+		
M	13	6	3+	3+	2+	2+	2+	2+	3+	12/ 7/38	No clinical evidence of epidermophytosis; positive trichophytin reaction
		14	4+	4+	4+	4+	3+	3+	4+		
F	14	6	4+	4+	4+	4+	4+	4+	4+	6/28/39	Dermatophytosis (?); markedly positive trichophytin reaction
		14	4+	4+	4+	4+	4+	4+	4+		
M	15	6	4+	4+	4+	4+	4+	4+	4+	8/ 9/39	No clinical signs of epidermophytosis
		14	4+	4+	4+	4+	4+	4+	4+		
M	16	6	3+	3+	3+	3+	3+	3+	3+	1/18/39	Trichophyton purpureum; slightly positive trichophytin reaction
		14	4+	4+	4+	4+	4+	4+	4+		
M	17	6	4+	4+	4+	4+	4+	4+	4+	4/ 5/39	Positive trichophytin reaction; involvement of hands and feet; T. purpureum
		14	4+	4+	4+	4+	4+	4+	4+		
M	18	6	4+	4+	4+	4+	4+	4+	4+	4/21/39	Positive trichophytin reaction; involvement of hands and feet; T. purpureum
		14	4+	4+	4+	4+	4+	4+	4+		

* 0, No growth; ±, slight growth below surface; 1+, moderate flocculate below surface; 2+, good subsurface growth, sometimes small colony on surface; 3+, partial covering of surface or as a band on side of tube with heavy subsurface flocculate; 4+, heavy growth of surface mycelium with heavy subsurface flocculate, or wide pellicle completely covering the surface and moderate subsurface flocculate.

The blood samples were graded as in the previous group. There were 6 patients whose blood serum showed no fungistatic power, according to our method of evaluation; the blood serum of 5 showed slight fungistatic power; that of 3 showed moderate fungistatic power, and that of 4 showed strong fungistatic power.

The blood serums of patients in this group showed no increased fungistatic power as compared with those in the first series of normal persons.

There were 7 patients with dermatophytids. Two showed no fungistatic power in their serum; 2 had slightly fungistatic blood serum; 2 had moderately fungistatic blood serum, and only 1 had strongly fungistatic serum. Our results were contrary to those of Ayres and Anderson [2] and resembled those of Lewis and Hopper.[5]

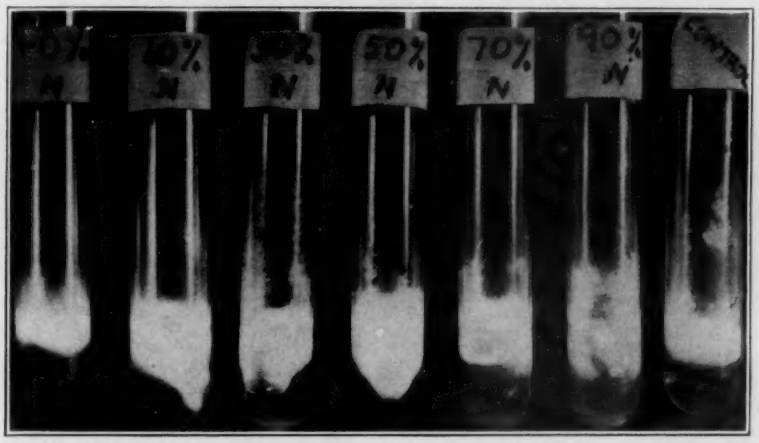

Fig. 1 (case 7, table 2).—Blood serum from a patient with dermatophytids and a strongly positive trichophytin reaction. Growth of T. gypseum fourteen days after inoculation. The serum showed no fungistatic power.

Too few cases were included in any subgroup to enable us to draw any definite conclusions. There were enough data on hand, however, to indicate that the strength of reaction to the trichophytin test bore no relation to the fungistatic power of a person's blood serum. One might deduce from these observations that the degree of fungous allergy or hypersensitivity bore no relation to the fungistatic power of the patient's serum.

Experiment 3.—Effect of Inactivation on the Fungistatic Power of Blood Serum.

An interesting observation was made while we were studying the effect of heat on the factors responsible for the fungistatic power of

blood serum. It was seen in a few instances that if the blood serum was heated at 56 C. for twenty minutes (as in the ordinary procedure for inactivation of serum for complement fixation reactions), there was an actual increase in the fungistatic power of the serum. This increase in fungistasis after inactivation was found in only 6 of the 36 cases investigated.

In contrast to this increase after heating for twenty minutes, heating the blood serum at 56 C. for more than one hour usually decreased its fungistatic power. An attempt was made in a series of experiments to identify complement with the factor responsible for the difference in fungistatic power of normal and inactivated serum, but this was not possible.

An increase in fungistasis of the inactivated serum as compared with the unheated serum was found in only 1 of the control group (case 1, table 1). Four of the 6 cases were from those included in table 2 (cases 8, 9, 13 and 14).

None of the 6 cases were among those of dermatophytids. This fact might be of importance. The greatest increase in fungistasis following inactivation was observed in the serum of a patient who presented clinical and microscopic evidence of dermatophytosis but who had a negative reaction to a trichophytin test.

Experiment 4.—Effects of Injections of Trichophytin[7] *on the Fungistatic Activity of Normal and of Inactivated Serum.*

An attempt was made to determine the influence of the injections of trichophytin on the fungistatic power of the blood serum. While it is as yet not clear just what the mechanism is which determines the amelioration of symptoms after injection of trichophytin, following the original report of Sulzberger and Wise,[8] many observers now agree that there are a number of striking instances of excellent therapeutic results following the injection of trichophytin in cases of resistant dermatophytosis with dermatophytids.

The commonly accepted theory is that by the injection of trichophytin a hyposensitization or desensitization is brought about, which then renders it impossible, or less likely, for the fungi or their products to elicit dermatophytids when coming in contact with the allergic skin.

All observers agree with the report of Sulzberger and Wise [8] that previously positive reactions to trichophytin tests can be made negative

7. A trichophytin made in our laboratory from Trichophyton gypseum was used in this experiment.

8. Sulzberger, M. B., and Wise, F.: Ringworm and Trichophytin, J. A. M. A. **99**:1759 (Nov. 19) 1932.

by injections of trichophytin. It has been noted by us and by others [4] that frequently after the injections were discontinued the trichophytin test gave positive reactions again. The accompanying case reports illustrate the effects of injections of trichophytin on the fungistatic power of blood serum in normal and in inactivated blood.

Case 1.—T. gypseum was isolated from the lesions of the feet of a man with a negative reaction to a trichophytin test. There were no dermatophytids. Blood was taken at the start of the experiment. The patient was given an injection

Fig. 2 (case 1, experiment 4).—Blood serum from a patient with a negative trichophytin reaction and dermatophytosis. Growth of T. gypseum eight days after inoculation. The serum was strongly fungistatic.

of trichophytin (1 cc. given subcutaneously) twice a week from the beginning of December 1938 to May 1939.

	Unheated Blood Serum [9]	Heated Blood Serum [10]
12/ 7/38	Strong fungistatic power	More fungistatic than unheated
12/30/38	Strong fungistatic power	More fungistatic than unheated
2/10/39	Moderate fungistatic power	No difference

9. The method of grading the serum was the same as used in experiments 1 and 2.

10. While unheated serum showed a 1 plus growth at the end of six days, the inactivated 90 per cent concentration of serum showed no growth; at the end of fourteen days there was a 2 plus growth in the 90 per cent concentration of unheated serum and only 1 plus in the heated serum.

CASE 2 (case 2, table 2).—In a patient with persistent dermatophytosis plus dermatophytids T. gypseum was isolated. A positive reaction to a trichophytin test was obtained on Dec. 15, 1938. Injections of trichophytin were given three times a week. The patient was desensitized by the end of February. Injections of trichophytin were continued up to July 22, 1939.

	Unheated Blood Serum	Heated Blood Serum
12/16/38	Moderate fungistatic power	No difference
1/ 4/39	Moderate fungistatic power	No difference
1/18/39	Moderate fungistatic power	No difference
2/ 3/39	Moderate fungistatic power	No difference
4/21/39	Slight fungistatic power	No difference

CASE 3 (case 6, table 2).—A patient with dermatophytosis plus dermatophytids gave a strongly positive reaction to the trichophytin test. Trichophytin was injected from June 13 to July 25 twice a week, with decreased trichophytin hypersensitivity.

	Unheated Blood Serum	Heated Blood Serum
6/16/39	No fungistatic power	No difference
7/ 7/39	No fungistatic power	No difference
8/ 9/39	No fungistatic power	No difference

CASE 4 (case 14, table 2).—A patient with questionable dermatophytosis, who gave a markedly positive reaction to a trichophytin test, was treated from June 26 to August 9 twice weekly with injections of trichophytin, with reduction in sensitivity.

	Unheated Blood Serum	Heated Blood Serum
6/28/39	No fungistatic power	No difference
8/10/39	No fungistatic power	No difference

CASE 5 (case 12, table 2).—A patient received injections of trichophytin twice weekly from June 28 to August 9. By August 9 the patient was partially desensitized to trichophytin.

	Unheated Blood Serum	Heated Blood Serum
6/30/39	Slight fungistatic power	No difference
8/10/39	No fungistatic power	No difference

In these cases the injections of trichophytin did not increase the fungistatic power of the blood serum. On the contrary, in 3 cases the fungistatic power of the trichophytin-treated patients was apparently decreased.

Case 2 was an example of the lack of relation between the fungistatic power of the blood serum and the clinical symptoms. This patient was clinically improved after the injection of trichophytin. The dermatophytids which were present on the hands practically disappeared. However, with the improvement of the clinical symptoms, the fungistatic power of the blood serum seemed to be decreased. In December, when the first specimen of blood was taken, there were vesicular dermatophytids plus eczematization of the hands and a frank dermatophytosis. In March she was much improved. At that time the fungistatic power of the blood serum was at its lowest level, as far as could be determined from our experiments.

We can thus conclude that injections of trichophytin did not increase the fungistatic power of the blood serum. Our results seemed to substantiate the conclusions of Per and Braude,[3] who maintained that injections of trichophytin decreased the fungistatic power of serum. The effects of inactivation of the serum on the fungistatic power of blood serum were not influenced by the injections of trichophytin.

Experiment 5.—The Fungistatic Power of Guinea Pig Serum.

The blood serum of guinea pigs was also investigated for its fungistatic power.

		Pooled Serum Unheated Blood Serum	Heated Blood Serum
1/21/39	2 pigs	Strong fungistatic power	Moderate fungistatic power
1/27/39	2 pigs	Strong fungistatic power	Strong fungistatic power
4/13/39	2 pigs	Strong fungistatic power	Moderate fungistatic power
5/ 8/39	2 pigs	Slight fungistatic power	Slightly increased fungistatic power

It will be noted that the guinea pig serum was fungistatic. It followed practically the same rule as did the human serum; that is, the fungistatic power was first noted in about a 30 per cent concentration of guinea pig serum in Sabouraud bouillon, with a gradual increase in fungistasis with increase in the concentration. The blood serum even in a 90 per cent concentration was fungistatic and not fungicidal.

Experiment 6.—The Fungistatic Power of Vesicle Fluid.

Vesicle fluid from 2 patients with dermatophytosis and dermatophytids was tested for fungistatic power. The fluid was obtained from vesicles on the hands in order to test, if possible, only dermatophytids. The roof of such vesicles was cultured, and in no instance was it possible to obtain a growth of fungi. The vesicle fluid was found to be less fungistatic than a comparative concentration of blood serum from the same person. The fungi grew readily in a 100 per cent concentration of vesicle fluid from both patients.

For control studies blood was obtained from a child with epidermolysis bullosa, and vesicle fluid was obtained from a traumatic vesicle on the child's hand. As can be seen from figure 3, while the 90 per cent concentration of blood serum from this patient in Sabouraud bouillon was practically not fungistatic, the vesicle fluid showed a marked inhibitory effect on the growth of the fungi.

Ascitic fluid was used instead of blood serum in a number of experiments and was found to have a moderate degree of fungistasis.[11]

11. This work was done with the technical assistance of Edward Weissbard.

SUMMARY AND CONCLUSIONS

The fungicidal and fungistatic power of human blood serum was tested by means of the pellicle method with T. gypseum in Sabouraud bouillon. Examination of more than 50 samples of blood from 35 persons indicated that blood serum is fungistatic.

The fungistatic power of the blood serum usually first became evident in a 30 per cent concentration of serum in Sabouraud bouillon. There was a gradual increase of fungistasis in the higher concentrations.

Twelve samples of blood serum from 10 control patients were examined. Of these, 1 showed no fungistatic power; 3 could be classified as slightly fungistatic; 2 could be rated as having moderately

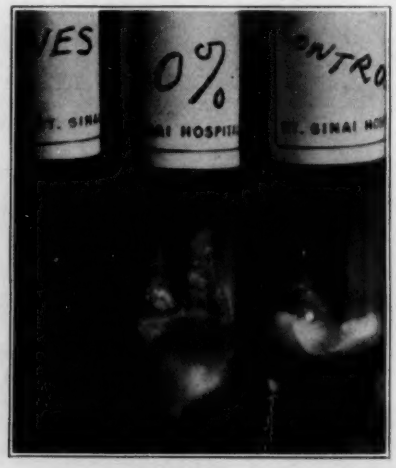

Fig. 3.—Specimens from a patient with epidermolysis bullosa. Strong fungistatic action of vesicle fluid (tube at the left), as compared with the action of 90 per cent concentration of blood serum from the same patient (center tube). The tube at the right is a control.

fungistatic power, and 6 were found to have strong fungistatic power, according to the method of grading previously described.

Eighteen samples of blood from 17 patients with positive trichophytin reactions of varying intensities were also investigated for their fungistatic action. Among these patients, there were 7 with dermatophytids and others with clinical and microscopic evidence of dermatophytosis but no dermatophytids, while a third group showed positive reactions to trichophytin tests but no clinical or microscopic evidence of fungous infection.

Of this group of serums 6 had no fungistatic power, 5 were slightly fungistatic, 3 were moderately fungistatic and 4 were strongly fungistatic. Of the 7 patients with dermatophytids, 2 showed no fungistatic power

in their serums; 2 had slightly fungistatic power in their serums; 2 had moderately fungistatic power, and the blood serum of 1 could be graded as strongly fungistatic.

Our experiments seemed to indicate that while blood serum may have fungistatic power, there is no increase in fungistasis in patients who have dermatophytids as compared with so-called normal controls. There is no relation between the degree of fungistasis and the strength of reaction to the trichophytin test.

Inactivation of the blood serum, heated at 56 C. for twenty minutes, caused an increase in fungistasis in 6 samples of serum of a total of 35 examined.

Injections of trichophytin seemed either to have no effect on the fungistatic power of blood serum or in some instances to decrease it.

Guinea pig serum has fungistatic power. Ascitic fluid was found to be only moderately fungistatic.

Vesicle fluid from dermatophytids failed to show any fungistatic action. However, fluid from vesicles from a patient with epidermolysis bullosa showed a strong fungistatic action, although the blood showed none.

PENIFORM ELEPHANTIASIS OF THE PRAEPUTIUM CLITORIDIS IN LYMPHOGRANULOMA VENEREUM

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Lymphogranulomatous syndromes of the female external genitalia have been well studied and classified by different authors. Simple chronic ulcers of the vulva, anterior genital elephantiasis (labia majora), with or without ulcerations, and the complex denominated esthiomene, with or without anorectal complications, constitute the best known forms of the disease.

For some years we have had the opportunity of examining and following the evolution of one or another of the aforementioned manifestations in prostitutes. Among these women we have observed a special form of elephantiasis, which affects principally the covering of the clitoris and which we have designated "peniform hypertrophy of the praeputium clitoridis," owing to the aspect that this manifestation presents in its most advanced stages.

This syndrome is not common; in only 5 of 66 women (7.5 per cent) presenting elephantiasis vulvae of a lymphogranulomatous nature have we been able to establish its presence and find different stages of its evolution.

The initial stage of this syndrome is characterized by a varying degree of elephantiasis of the labia majora and a slight hard edematous infiltration of the glans clitoridis and its prepuce. The clitoris and prepuce appear like the knob of a bell lying between the infiltrated labia majora (fig. 1 *A*). In a more advanced stage, the hypertrophied parts protrude between the labia majora and hang downward (fig. 1 *B*). Such a formation is covered on its outer surface by skin and posteriorly by mucosa. It is of hard consistency, which is more marked at the distal and free extremity. The root of the structure preserves a softer consistency. In the final stages the structure hangs before the external genitalia like a penis and completely covers the urethral and vaginal orifices (fig. 2).

In the intermediate and advanced stages of the syndrome the posterior surface of the peniform structure appears ulcerated and macerated, owing to secondary infections favored by the constant irritative action of

From the Department of Social Hygiene, Public Health Service.

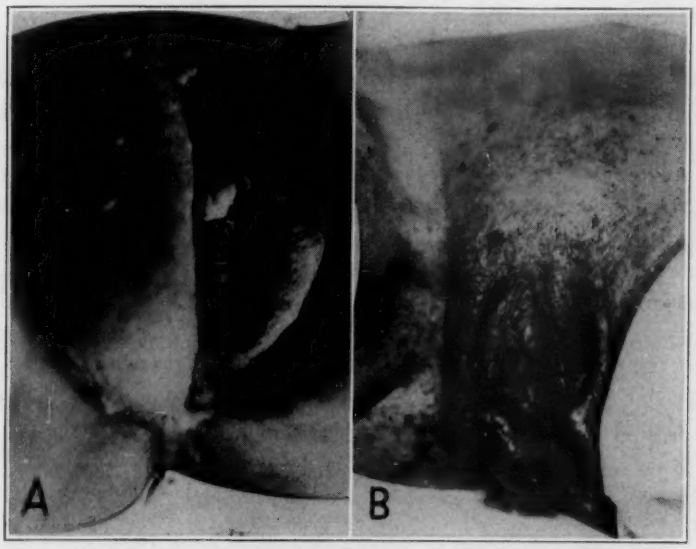

Fig. 1.—Elephantiasis of the prepuce of the clitoris: *A*, as a small knob between the labia majora, and *B*, in a more advanced stage.

Fig. 2.—Advanced stage of elephantiasis of the prepuce of the clitoris.

the urine. In the longest-standing case of our series (four years), represented in figure 2, we were able to establish the existence of papular formations on the posterior surface and free extremity, the aspect of which was much like that of so-called "pseudo-lues papulosa," described by Lipschütz.

Maceration of tissues of this pendular structure and secondary infection contribute to give the condition a foul odor. Dark field examination of the soggy material that covers the posterior surface reveals the existence of enormous numbers of spirochetes.

Specimens removed for biopsy from 2 of our patients and stained, after fixation in Susa's or Mingazzin's solution, by Mann's procedure showed the existence of numerous cytoplasmic and free microscopic and macroscopic granulocorpuscles of the type described by Miyagawa [1] in experimental lymphogranulomatous lesions and by Coutts, Martini and Gacitua [2] in different human structures attacked by the virus of the disease.

In the presence of this syndrome, in which a preeminence of the elephantiasic process resides in the praeputium clitoridis, several conjectures may be made on the basis of clinical and anamnestic data.

All recorded cases of our series were among prostitutes of the lowest social class. All of them had noticed as a first manifestation of the disease an increase in size of one or both labia majora. The study and analysis of lymphatic circulation of the region, as demonstrated in the textbooks of Testut and Cunningham and in the specialized treatise on lymphatics by Rouvière,[3] do not throw any light on the preeminence of periclitoridean hypertrophy. Lymph node stasis in determined territories, the circulation of which is not yet well known, would be the only possible explanation for this phenomenon.

Careful observation of our cases has shown that the clitoris, especially the glans, partakes in the process at its earliest period. Later involvement of this structure in the diseased tissues does not allow us to establish its definite participation. Surgical removal of the pendular portion and a careful search for erectile tissue would clear the problem up definitely as regards this point. Unfortunately, our patients have not permitted surgical intervention.

Vicuña Mackenna 35 A.

Carmen 226.

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1. Miyagawa, Y.: On the Virus of Lymphogranuloma Inguinale, Jap. J. Dermat. & Urol. **39**:105, 1936.

2. Coutts, W. E.; Martini, J., and Gacitua, M.: Entwicklungsformen des Virus des Lymphogranuloma Inguinale, Dermat. Wchnschr. **107**:1404, 1938.

3. Rouvière, H.: Anatomie des lymphatiques de l'homme, Paris, Masson & Cie, 1932.

ERYTHEMA ELEVATUM DIUTINUM

REPORT OF A CASE

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AND
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The nosologic position of erythema elevatum diutinum (persistent elevated erythema) is still uncertain. Over ten years ago Weidman and Besancon [1] made an admirable attempt to prove its identity, isolating an organism (Streptococcus ignavus) and divorcing the condition from granuloma annulare and the erythema multiforme perstans group of cutaneous diseases. Crocker and Williams,[2] Trimble [3] and Gray [4] also considered it a separate entity. Trimble and Weidman and Besancon felt sympathetic to the hypothesis that the so-called Bury type and granuloma annulare were the same but nevertheless recognized the Hutchinson type as existing separate and distinct from granuloma annulare.

We agree with Weidman and Besancon that the sparsity of cases appearing in the literature has made it impossible to collect sufficient data to determine the clinical and histologic requisites for diagnosis of this rare disease.

The patient on whom this report is based was admitted to Bellevue Hospital in January 1938. Reports based on him have previously appeared in the literature, with tentative diagnoses of lymphoblastoma, xanthoma,[5] mycosis fungoides,[6] multiple idiopathic hemorrhagic sar-

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From the Department of Dermatology and Syphilology, New York University College of Medicine, and the Department of Dermatology and Syphilology, Third Medical (New York University) Division, Bellevue Hospital, service of Dr. Edward R. Maloney.

1. Weidman, F. D., and Besancon, J. H.: Erythema Elevatum Diutinum, Arch. Dermat. & Syph. **20**:593 (Nov.) 1929.

2. Crocker, H. R., and Williams, C.: Erythema Elevatum Diutinum, Brit. J. Dermat. **6**:1 (Jan.) 1894.

3. Trimble, W. B.: Erythema Elevatum Diutinum: Report of a Case, with Remarks on Its Nosologic Position, Arch. Dermat. & Syph. **13**:383 (March) 1926.

4. Gray, A. M. H.: A Case of Erythema Elevatum Diutinum, Brit. J. Dermat. **44**:551 (Nov.) 1932.

5. Bloom, D.: A Case for Diagnosis (Lymphoblastoma? Xanthoma?), Arch. Dermat. & Syph. **37**:918 (May) 1938.

(Footnotes continued on next page)

coma [7] and erythema elevatum diutinum.[8] It is interesting to note that a diagnosis of granuloma annulare was never advanced.

REPORT OF CASE

J. H., a white man aged 64, when first seen had an eruption of five months' duration. His past history was not significant. He stated that he had not had syphilis or gonorrhea. Furthermore, there was no history of the ingestion of drugs which might have been responsible for the lesions.

The eruption appeared on his neck in September 1937 and was not accompanied by subjective sensations. The rest of the lesions appeared within the following two months. They were generalized and consisted of variously sized nodules and plaques, ranging from 0.5 to 4 cm. in diameter. There was some tendency toward grouping, especially around the joints. Small aggregate lesions were present about his ears and nose. On both sides of his neck posteriorly were clumps of slightly larger lesions. Similar isolated ones were situated on his chest and back. On the extremities there was a tendency toward localization, especially about the wrists and even on the knuckles and dorsum of the proximal articulations of the fingers. The mucous membranes were not involved. All of the lesions appeared similar in their general characteristics. They were circular or irregularly oval, arising abruptly from the normal skin. The larger ones were plateau-like, while in the others the centers were perceptibly more elevated than the edges. In none was there any evidence of central depression or regression. They varied from dusky reddish brown in the larger to orange yellow in the smaller ones. Those about the neck might readily have been mistaken for xanthomas. The surface of all was smooth and devoid of crust and scale. The normal cutaneous markings were less distinct than on the surrounding skin. Lanugo hair was absent from the surface of the nodules. On palpation the nodules were firm and densely infiltrated and did not seem to encroach beyond their visible borders but could be lifted freely from the subcutaneous tissue.

The patient was well developed, well nourished and apparently in good health. His pupils were normal. His teeth and gums were in poor condition. There was no adenopathy except in the inguinal region, where he had a few tender glands about the size of a hazelnut. The lungs were normal except for slight wheezing heard at the bases, with some diminution of breath sounds. The heart sounds were somewhat diminished, and there was a systolic murmur at the apex. The borders were within normal limits. No mass, tenderness or rigidity was felt in the abdomen. The liver, spleen and kidneys were not palpable. The extremities were normal but for a bilateral hallux valgus. No pathologic reflexes were present.

The tuberculin test (Mantoux) gave a negative reaction with 1 to 100,000 dilution but a 3 plus reaction with a 1 to 1,000 dilution. The urine was normal. The Wassermann reaction of the blood was negative. Clinical and cytologic

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6. Fox, H.: A Case for Diagnosis (Mycosis Fungoides? Lymphoblastoma?), Arch. Dermat. & Syph. **38**:103 (July) 1938. Bloom, D.: A Case for Diagnosis (Mycosis Fungoides?), ibid. **38**:124 (July) 1938.

7. Bloom, D.: A Case for Diagnosis (Kaposi's Sarcoma?), Arch. Dermat. & Syph. **38**:472 (Sept.) 1938.

8. Bloom, D.: Erythema Elevatum Diutinum, Arch. Dermat. & Syph. **39**: 369 (Feb.) 1939.

Fig. 1.—Erythema elevatum diutinum.

Fig. 2.—Erythema elevatum diutinum.

distinct clinical entity. We believe that the Bury type does not exist but is actually a variant of granuloma annulare. We have tabulated the predominant reasons for our conclusions in the accompanying tabulation.

	Erythema Elevatum Diutinum	Granuloma Annulare
Distribution	Bilateral and roughly symmetric	Unilateral
Age and sex	Middle-aged and elderly men	In children and young women
Lesion	Flat, raised and red, with no central clearing	Colorless or pink ring of nodules, with usually normal center
Duration of lesions	Persistent	Fade and reappear
Response to treatment	Usually radioresistant	Radiosensitive
Histologic observations	Preeminently acute (in terms of tissue process) polymorphonuclear leukocytes and eosinophils but not necrosis	Process varies from subacute to chronic, with fibroblastic proliferation as the predominant reactive expression and extensive necrosis

Dr. Frederick Weidman and Dr. Timothy J. Riordan furnished the histologic interpretation.

PYODERMA CHANCRIFORME FACIEI

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Under the title of isolated chancre-like pyoderma of the skin of the face (pyoderma chancriforme faciei), Hoffmann [1] reported 5 cases of almost identical lesions which appeared as single foci on the face. The lesion in each case resembled a button-like, eroded or ulcerative chancre or vaccinia. The base was indurated and superficial (rarely deep), with smooth ulceration and without a separating border. The secretion was serous rather than purulent. The thin, elevated border was bright red, and the crusts were yellowish or darker. There was a hard, almost indolent swelling of the regional lymph gland. In 1 case a lesion identical in character with the original appeared symmetrically eleven months later on the opposite eyelid.

The ulcers occurred most commonly on soft skin, where irritation or maceration by tears or sputum might favor development. There were no important subjective symptoms. The lesions responded to antiseptic applications.

The laboratory findings, except a pure culture of Staphylococcus aureus, were normal. The histologic changes were reported as acanthosis, edema, distended lymph and blood vessels, toxic endovasculitis of the small veins and arteries, perivascular infiltration of lymphocytes, leukocytes, eosinophils and plasma cells. There were also fibroblasts and pigment-containing cells.

REPORT OF A CASE

R. H. E., a widow aged 50, a patient of Dr. Earl Brand, of Webster Groves, Mo., consulted me in December 1939 on account of an ulcer just below the outer canthus of the left eye. The lesion, which appeared suddenly and without premonitory symptoms, was pinhead sized at onset and enlarged in three and one-half weeks to a diameter of 1.5 cm.

Inspection revealed a round, shallow ulcer with a grayish yellow base, sloping edges, an elevated, hard, bright red border and a narrow areola of erythema. There was a thin, slightly purulent discharge. The lesion, which could be picked up, button-like, between the fingers, was freely movable over the subcutaneous tissue. The left preauricular lymph gland was enlarged, hard and slightly tender. There was no pain, burning or itching, and the temperature remained normal.

From the Department of Dermatology and Syphilology, St. Louis University School of Medicine.

1. Hoffmann, E.: Isolierte schankerähnliche Pyodermie der Gesichtshaut (Pyodermia chancriformis faciei), Arch. f. Dermat. u. Syph. **170**:403, 1934.

The patient had been in good health. She stated that she had never had a similar condition or any other cutaneous disease. Her normal weight had been maintained. There had been no recent respiratory or gastrointestinal disease or other illness. The physical examination gave essentially negative results. The death of her husband had caused frequent spells of crying over several weeks immediately prior to the appearance of the ulcer. This wetting of the skin by secretion was mentioned by Hoffmann as a possible predisposing factor.

Four weeks after the onset of the first lesion, a similar one appeared on the upper right eyelid. Its development was accompanied by slight burning. The clinical appearance was identical with that of the original lesion except that it did not attain a size larger than 5 mm. in diameter.

Laboratory Findings.—The dark field examination gave negative results. The Kahn reaction of the blood remained negative on repeated examination over two and one-half months after the lesion first appeared. The blood count showed 5,782 white cells and 5,020,000 red cells per cubic millimeter and 71 per cent

Fig. 1—Pyoderma chancriforme faciei.

hemoglobin. A differential count showed 28 per cent lymphocytes, 59 per cent segmented neutrophils, 2 per cent stab neutrophils, 2 per cent eosinophils, 1 per cent basophils and 8 per cent monocytes. Agglutination tests of the patient's blood serum gave negative results for tularemia and brucellosis. A pure growth of Staph. aureus was obtained on culture.

Histologic examination of the tissue obtained from the hard edge of the ulcer showed acanthosis, edema of the papillary layer and cutis and vascular and lymphatic dilatation. A closely packed perivascular infiltrate was made up of leukocytes, lymphocytes, plasma cells and fibroblasts, with an occasional eosinophil. The infiltrate stopped abruptly just beyond the acanthotic epidermal border but extended from the papillary layer into the subcutis. There was no evidence of tuberculosis or carcinoma, and no fungi were found.

As diagnoses of chancre, carcinoma, tuberculosis, tularemia, vaccinia and sheep pox were ruled out by the history or by the results of laboratory procedures, there remained only the possibility of a pyogenic ulcer. This contention was supported by the growth of a pure culture of Staph. aureus, the histologic observations and the response to treatment.

Treatment with crystal violet and with antiseptic packs was then instituted. Some improvement occurred at first. This was followed by an exacerbation, with increase of secretion and widening of the ulcers. Sulfamethylthiazole (2-sulfanilamido-4-methylthiazole) (16 Gm. in twenty-four hours) was administered by mouth. Because it caused severe nausea, administration of the drug was discontinued. After seventy-two hours a smaller dose (12 Gm. per twenty-four hours) was employed for two days. Healing occurred at once in both lesions.

The indurated border of the original lesion underwent involution slowly and remained as a thin, elevated line about the scar for nearly two weeks after healing had occurred. The final scar was smooth, soft and without pigmentation.

In the light of Hoffmann's experience, healing could have been expected with ordinary antiseptics directed toward the staphylococci. In this instance, the use of sulfamethylthiazole appears to have hastened the final outcome.

EHLERS-DANLOS SYNDROME

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AND
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The Ehlers-Cohn-Danlos [1] syndrome was until recently considered uncommon in America. Tobias [2] reported the first case in the United States in 1934. In the last few years cases have been reported with increasing frequency. The syndrome is characterized by excessive fragility of the skin and the blood vessels, hyperelasticity of the skin, hyperflexibility of the joints and the formation of pseudotumors and subcutaneous nodules.

REPORT OF A CASE

A. R., a white boy aged 3 years, was admitted to the pediatric ward of the Brooklyn Jewish Hospital, with the complaint of excessive bruising and bleeding. The family history was irrelevant. The child was born prematurely, in the thirty-second week of gestation, and weighed only 2½ pounds (1.15 Kg.) at birth. It was necessary to give him two transfusions of blood for weakness and cyanosis. His development was then normal. He had a cervical abscess when he was 1 year old, and the tonsils and adenoids were removed when he was 2 years old.

The present condition was noted when the child began to walk, at approximately 14 months of age. He suffered bruises easily, and ecchymosis developed after slight trauma. Open wounds bled excessively and required tight dressings to produce hemostasis. He did not have any spontaneous hemorrhages, nor was bleeding from the mucous membranes noted at any time.

The child was friendly, well nourished and well developed. The positive findings were limited to the skin and joints. The skin was dry and scaly and showed cutis ansarina on the extensor surfaces of the arms and legs. When it was picked up it felt smooth and velvety. It was loose and decidedly hyperelastic. Manipulation of the joints showed a moderate degree of hyperflexibility, most noticeable in the fingers. The muscles were somewhat flabby. There were linear, irregularly shaped

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From the Department of Dermatology and Syphilology and the Department of Pediatrics of the Jewish Hospital of Brooklyn.

Presented before a meeting of the Section of Dermatology and Syphilology of the New York Academy of Medicine, Dec. 16, 1939.

1. Ehlers, E.: Cutis laxa, Dermat. Ztschr. **8**:173, 1901. Cohn, P.: Demonstration eines Patienten mit Gummihaut (Cutis laxa) und eigentumlichen zirkumskripten Hautveränderungen, braunroten eindruckbaren Erhebungen, Verhandl. d. deutsch. dermat. Gesellsch. **9**:415, 1907. Danlos, H.: Un cas de cutis laxa avec tumeurs, Bull. Soc. franç. de dermat. et syph. **19**:70, 1908.

2. Tobias, N.: Danlos' Syndrome Associated with Congenital Lipomatosis, Arch. Dermat. & Syph. **30**:540 (Oct.) 1934.

and atrophic scars of various sizes on the forehead, right cheek, back, elbows and knees. They were flat, somewhat depressed, wrinkled and papyraceous. The scar on the right side of the neck was the site of an operation for abscess. The linear scar on the left tibial region was caused by the removal of tissue for biopsy.

There were irregularly shaped, soft, multilobular, violaceous, raisin-like tumors and subcutaneous nodules on the elbows and knees. The patient struck his left elbow against a chair July 18, 1939. Following the trauma there were severe ecchymosis and a gaping wound in the skin, which bled profusely. The mother applied dressings but could not stop the bleeding. The patient was brought to the Jewish Hospital, and the hemorrhage was stopped. A ballooning red tumor formed,

Fig. 1.—Note atrophic scars on the forehead and the left elbow. There is a large pseudotumor on the right elbow.

which was subsequently absorbed after the application of tight dressings. The resultant atrophic scar was wide, flat and fanshaped, with radiating lines (fig. 1).

Laboratory Examination.—The hemoglobin content was 81 per cent; the erythrocytes numbered 4,300,000 and the leukocytes 13,000 per cubic millimeter. The differential count showed 40 per cent polymorphonuclear cells, 16 per cent eosinophils, 40 per cent lymphocytes and 4 per cent mononuclear leukocytes. There were no pathologic cells. The bleeding time was one minute, and the clotting time, seven minutes. The clot retraction time was eight hours, with a normal clot. The bone marrow confirmed the peripheral eosinophilia. The urine was normal. Roentgenograms of the long bones and of the lungs showed no abnormalities. The Kline and Mantoux tests gave negative results. Chemical examination of

the blood showed total lipids 587 mg., total cholesterol 203 mg., with free cholesterol 28 per cent, and calcium 11.2 mg. per hundred cubic centimeters; the phosphorus content was 4.6 mg. and the value for phosphatase 16.9 Bodansky units. Chemical examination of the skin showed total solids 52.4 per cent, total lipids 32.1 per cent (of dry weight) and total cholesterol 0.48 per cent (of dry weight). The percentage of free cholesterol was too low to determine.

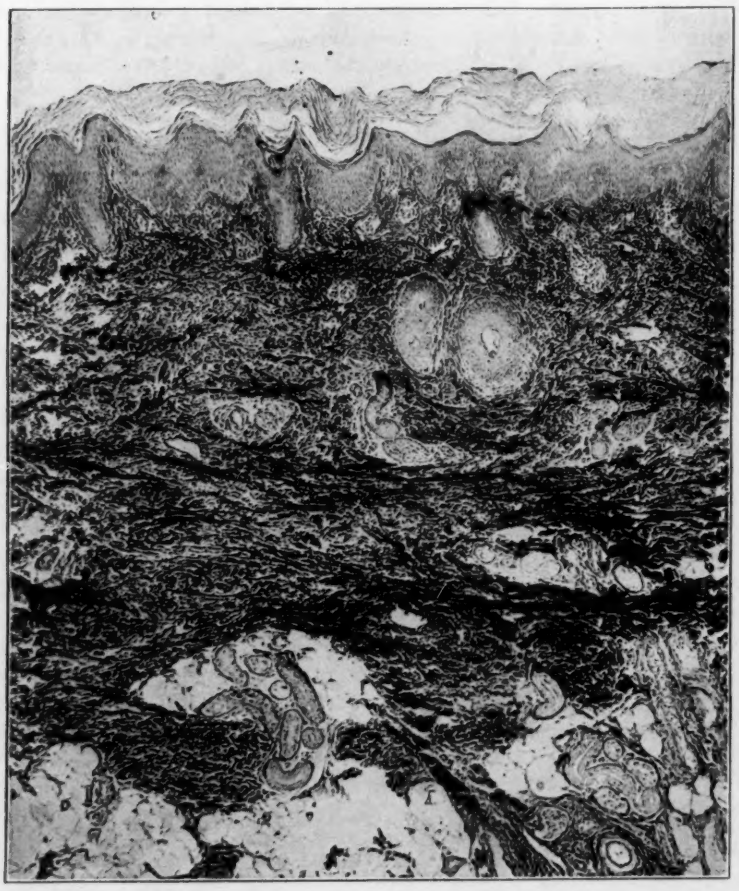

Fig. 2.—The epidermis is wavy. The dense network of elastic fibers fills the papillary bodies and extends to the midcutis (Weigert's elastic tissue stain; × 100).

The results of microscopic examination of the tissue removed from the left tibial region were reported by Dr. D. L. Satenstein as follows:

With the hematoxylin and eosin stain the framework of the subepidermal cutis was dense; the fibers in the papillary bodies were heavy. In the midcutis there was considerable irregularity in the thickness of the fibers, which in part were arranged parallel with the surface. The usual network of the cutis was not present. The blood vessels were not telangiectatic, and the adnexa were normal.

With Weigert's elastic tissue stain the picture was striking. The subepidermal network of elastic fibers was extremely dense, almost filling the papillary bodies and extending down to the upper part of the middle portion of the cutis. The fibers in the middle part of the cutis were increased in amount and appeared in part as a network around the individual collagen bundles. There was no increase of elastic tissue about the vessels or adnexa, and it was somewhat sparse in the subcutis (fig. 2).

Under high power the elastic fibers were seen to extend into the epidermis between the basal cells; they were thicker than usual in this zone. In the upper part of the cutis there was considerable variation in the thickness of the fibers. There was considerable breaking up of fragments of various sizes. In the deep part of the cutis the fibers were thick and somewhat wavy and were arranged parallel with the surface. There was no evidence of activity or degeneration.

To summarize, there were extensive hyperplasia and thickness of the elastic tissue throughout the cutis, most pronounced in the upper part. The microscopic diagnosis was hyperplastic elastosis, an anomaly of development.

COMMENT

The first descriptions of the syndrome were those of Ehlers, of Cohn and of Danlos. The recent rather complete survey of the literature of Ronchese [3] makes a further review superfluous. His report included a discussion of 27 cases culled from the literature, with a complete bibliography. To this number were added 3 of his own cases. Smith [4] stated that the number of complete cases reported was still under 50. In view of this fact, it is singular to note that only 5 cases were reported in the American literature previous to May 1939, by Tobias,[2] Ronchese,[3] Smith,[4] Brown and Stock [5] and Rambar.[6] To these may be added the cases of Weiss,[7] Tobias [8] and the Clinic of the Washington School of Medicine.[9] Numerous other cases of this syndrome reported in the literature were incomplete, the symptoms being confined to hyperelasticity of the skin and abnormal flexibility of the joints.

In cases of dermatolysis the skin is loosely attached to the underlying tissues and has great elasticity and distensibility, similar to that which obtains normally in animals. There are no perceptible changes in the

3. Ronchese, F.: Dermatorrhexis with Dermatochalasis and Arthochalasis, Am. J. Dis. Child. **51**:1403 (June) 1936.

4. Smith, C. H.: Dermatorrhexis (Ehlers-Danlos Syndrome), J. Pediat. **14**:632, 1939.

5. Brown, A., and Stock, V. F.: Dermatorrhexis: Report of Case, Am. J. Dis. Child. **54**:956 (Oct.) 1937.

6. Rambar, A. C.: Ehlers-Danlos Syndrome, J. Pediat. **12**:592, 1938.

7. Weiss, R. S.: Danlos' Syndrome, read before the American Academy of Dermatology and Syphilology, St. Louis, Nov. 15, 1938.

8. Tobias, N.: Danlos' Syndrome, Associated with Congenital Lipomatosis, Arch. Dermat. & Syph. **40**:135 (July) 1939.

9. Clinics of Washington University School of Medicine: Danlos' Syndrome, Arch. Dermat. & Syph. **40**:137 (July) 1939.

texture of the skin, although it feels soft and velvety. The elasticity may be general or confined to certain regions and is especially prominent about the large joints and the face. The subcutaneous fat seems to have disappeared, so that the bony prominences protrude. Another important point is what Danlos described as the vulnerability of the skin, as shown by numerous scars which are scattered over the body. In order for slight trauma to produce such a result, there must be some special vulnerability. Usually the elbows, knees and forehead show these gaping wounds, which heal with wrinkled atrophic scars.

Protuberances in the form of so-called pseudotumors occur at the exposed areas, such as the elbows and knees. They are molluscum-like and have the shape of raisins. They are covered with a glistening, semitranslucent membranous capsule, through which may be seen colors varying from deep red to blue, as in hemangiomas. The formation of the pseudotumors may be explained as follows. When the area is traumatized, the hyperplasia of the elastic tissue causes the wound to retract and form a gaping superficial wound. There is local hemorrhage into the wound, which consists of pockets of blood. When absorption takes place, there remains only a thin, dried-up film, comparable to a fig or raisin.

Recently Weber and Aitkin [10] described a case in which there were numerous cutaneous nodules which were freely movable under the skin and which they called "spherules." The authors expressed the opinion that these lesions were not true lipomas but the result of a deviation from the normal type of the growth of fats, a budlike development of small lobules from the subcutaneous fat. Probably in time they would become minute cysts containing oily substances, with thickened fibrous or even calcerous walls. They considered the lesions a fifth sign of the Ehlers-Danlos syndrome. Coe and Silvers [11] presented a case in which the syndrome had been present in four generations and concluded that the condition is inherited as an incomplete syndrome.

The condition in our case fulfils all the requisites of the Ehlers-Danlos syndrome. A complete dermatopathologic picture is given, with the microscopic diagnosis of hyperplastic elastosis, an anomaly of development. The results of chemical examination of the blood were within normal limits and offer no clue to the underlying disease. The results of the chemical examination of the skin are offered as factual observations, their interpretation depending on similar observations on normal skin and on skin in other cases of dermatolysis.

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10. Weber, F. P., and Aitkin, J. K.: Nature of Subcutaneous Spherules in Some Cases of Ehlers-Danlos Syndrome, Lancet **1**:198, 1938.

11. Coe, M., and Silvers, S. H.: Ehlers-Danlos Syndrome (Cutis Hyperelastica), Am. J. Dis. Child. **59**:129 (Jan.) 1940.

CONCLUSION

The Ehlers-Danlos syndrome is well defined and constitutes a clinical entity which should be included in the group of congenital dystrophic anomalies. The pathologic findings provide a sound basis for the clinical manifestations. All discussions as to pathogenesis are hypothetic.

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NEUROSYPHILIS AND LATE SYPHILIS OF SKIN, MUCOUS MEMBRANES AND BONES

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One of the tenets held over from the early days of syphilology which is still frequently accepted and taught is the belief that patients with late syphilis of the skin, mucous membrane or bone seldom have neurosyphilis. It is commonly believed that these manifestations of the disease are allergic in origin and influence the immunity reaction so as to protect the neuraxis against involvement by the Spirochaeta pallida. Except so-called "precocious tertiary" lesions of the skin, which are on the borderline between those of early and those of late syphilis, and acute syphilis of the bone, which may occur as a phase of early syphilis, these benign tertiary manifestations as a rule appear after the tenth year of the infection. However, as a result of the discovery that a large number of patients with early syphilis show changes in their spinal fluid due to neuraxis involvement, modern syphilologists agree that neurosyphilis is established during the first year of the infection.[1] As the infection advances, these changes become more pronounced but not more frequent. In addition, it has been shown that involvement of the nervous system cannot always be detected in early syphilis by the routine examination of the spinal fluid.[2] When one considers these facts, it is difficult to assume that a manifestation which does not appear until the disease is well established in all its phases can be responsible for the suppression or modification of the course of the infection.

The origin of the assumption that benign late syphilis influences the incidence of neurosyphilis is obscure. In all probability it was formulated in the pre-Wassermann era and certainly before the necessity for routine examination of the spinal fluid of all patients with syphilis was apparent. Whatever the origin, it has persisted to the present time. Moore[3] remarked that it is ". . . comparatively rare for a

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From the Public Health Institute, Chicago.

1. Keidel, A.: Studies in Asymptomatic Neurosyphilis: Apparent Rôle of Immunity in Genesis of Neurosyphilis, J. A. M. A. **79**:874 (Sept. 9) 1922.

2. Chesney, A. M., and Kemp, J. E.: Incidence of Spirochaeta Pallida in Cerebrospinal Fluid During Early Stage of Syphilis, J. A. M. A. **83**:1725 (Nov. 29) 1924.

3. Moore, J. E.: Syphilis, in Blumer, G.: The Practitioners Library of Medicine and Surgery, New York, D. Appleton-Century Company, Inc., 1936, vol. 10, p. 884.

patient to suffer from both late mucocutaneous and neurosyphilis, and particularly uncommon for parenchymatous neurosyphilis (tabes or paresis) to be preceded or accompanied by gummatous lesions of skin or bones."

There is no logical reason to believe that lesions of late syphilis of the skin, mucous membrane or bone protect the central nervous system. The absence of neurosyphilis and the presence of benign late syphilis are due to some common factor, perhaps immunity or trophism, but one is not dependent on the other. Therefore, there is no justification for the assumption that the presence of late syphilis of the skin or bone makes routine examination of the cerebrospinal fluid unnecessary.

Previous studies, particularly those of Dercum,[4] Jeanselme,[5] Pollitzer,[6] Bond,[7] Hoffman [8] and White,[9] do not add to the information, since these authors were concerned primarily with the frequency of late cutaneous or osseous lesions in patients with symptomatic and generally advanced neurosyphilis and not with the incidence of neurosyphilis in patients with benign late syphilis.

The following study was undertaken to determine the frequency of the coexistence of syphilis of the central nervous system and late mucocutaneous and osseous syphilis.

The series comprised 165 patients with late syphilis of the skin, mucous membrane and bone who were admitted between 1932 and 1936 to a large venereal disease clinic.[10] The ages ranged from 20 to 69, 9 being Negroes (6 men and 3 women) and the remainder white persons (99 men and 57 women). Selection of subjects was biased only to the point that in each case the diagnosis of the tertiary lesion was unquestionable and the physical examination of the nervous system was adequate. Seventy (42.4 per cent) of the 165 patients had examinations of the spinal fluid before or shortly after the onset of treatment. It is from the cases of this group of 70 patients that conclusions will be drawn.

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4. Dercum, F. X.: The Clinical Forms Presented by Nervous Syphilis, New York M. J. **98**:745, 1913.

5. Jeanselme, E.: Elephantiasis syphilitique du membre supérieur, Bull. Soc. franç. de dermat. et syph. **24**:129, 1913.

6. Pollitzer, S.: Symposium on Syphilis, Post Graduate **28**:729, 1913.

7. Bond, E. D.: Personal communication to C. J. White.

8. Hoffman, J. A.: A Report of the Patients Discharged from the John G. Kerr Hospital for Insane During 1912, China M. J. **27**:369, 1913; Insanity in China, Boston M. & S. J. **170**:572, 1914.

9. White, C. J.: A Statistical Study of Syphilis: The Relation of Its Symptoms to Subsequent Tabes Dorsalis or General Paresis, J. A. M. A. **63**:459 (Aug. 8) 1914.

10. Public Health Institute, Chicago.

This group can be compared with a control group of cases taken from the files over approximately the same time interval.[11] In this control group of over 700 cases, the incidence of neurosyphilis was established by spinal fluid examinations and represents the incidence of neuraxis involvement in the clinic as a whole.

RESULTS

Fifteen patients (12 men and 3 women), comprising 21.4 per cent of the 70 who had complete examinations of the nervous system (including examinations of the spinal fluid), had positive reactions of the spinal fluid. Seven, or 10 per cent, of the 70 patients had asymptomatic neurosyphilis. In those patients classified as having asymptomatic neurosyphilis, physical examination revealed at the most only suggestive evidence of neuraxis involvement, such as slight irregularity of the pupils, sluggish reaction to light and hypoactive or hyperactive deep reflexes. In no instance would it have been possible to make a positive diagnosis of involvement of the nervous system from the history or physical examination without the positive result of the spinal fluid examination.

Approximately 40 per cent of the 700 control patients had serologic evidence of neurosyphilis. Twenty-five per cent of this group had asymptomatic neurosyphilis.[12]

COMMENT

Many modern investigators have contributed large series of cases as evidence against the theory of an antagonism between late mucocutaneous or osseous syphilis and neurosyphilis. Arzt and Fuhs[13] reported a series of 350 cases of tertiary syphilis of the skin and mucous membrane, in 29 per cent of which the spinal fluid gave a positive reaction. These authors reported an additional 300 similar cases in which 32 per cent had spinal fluid with a positive reaction, but only 10 per cent had clinical involvement of the nervous system. Hval[14] reported 95 cases, in 70 of which there were examinations of the spinal fluid. Of

11. Kemp, J. E., and Menninger, W. C.: The Influence of Pregnancy upon the Course of Syphilis, Brit. J. Ven. Dis. **12**:206, 1936.

12. Menninger, W. C., and Kemp, J. E.: The Incidence of the Clinical Types of Neurosyphilis in Males, Pregnant and Non-Pregnant Females, J. Nerv. & Ment. Dis. **83**:275, 1936.

13. Arzt, L., and Fuhs, H.: Liquor- und klinische Nervenveränderungen bei tertiärer Haut- (Schleimhaut-) Lues und ihre Beurteilung, hinsichtlich Prognose und Therapie, Arch. f. Dermat. u. Syph. **163**:164, 1931; Liquor und tertiäre Haut-(Schleimhaut-) Lues, ibid. **166**:427, 1932; Manifeste Neurolues (Lues cerebrospinalis, Tabes, progressive Paralyse) bei Tertiäre Haut- (Schleimhaut-) Lues, ibid. **166**:234, 1932.

14. Hval, E.: Condition of Cerebrospinal Fluid in Gummatous Syphilis, Acta dermat.-venereol. **13**:643, 1932.

these, in 14, or 20 per cent, the spinal fluid showed pathologic changes; without elaborating, he stated that in 6 of the 14 the changes were slight. O'Leary and Rogin,[15] examining the records of 100 cases of tertiary syphilids, found positive reactions in the spinal fluid in 20 cases, in 10 of which there were clinical signs of involvement of the nervous system. In addition, 4 patients were observed with signs of syphilis of the central nervous system but with negative reactions of the spinal fluid. In the majority of their patients with clinical neurosyphilis the disease was of the tabetic type.

Konrad [16] reported syphilis of the central nervous system in 19 per cent of 300 cases, and Grschebin,[17] in 13 per cent of 300 cases.

Merenlender,[18] in his review of the literature to 1932, was able to collect 352 authentic and proved cases of coexisting syphilis of the central nervous system and late syphilis of the skin or bones.

The accompanying table allows a comparison of figures presented by various authors. All forms of neurosyphilis occurred in from 13

Incidence of Neurosyphilis in Cases of Late Syphilis of the Skin, Mucous Membranes and Bones

Authors	Total Number of Cases	Per Cent of Cases of Syphilis of the Central Nervous System
Arzt and Fuhs	300	32.0
Arzt and Fuhs	350	29.0
Hval	95	20.0
O'Leary and Rogin	100	24.0
Konrad	300	19.0
Grschebin	300	13.0
Shaw	70	21.4
Total	1,515	22.6

to 32 per cent of patients with mucocutaneous or osseous tertiary syphilis.

The high incidence of asymptomatic neurosyphilis in this series is of particular importance. It would have been highly desirable to know how many more such cases would have been discovered had it been possible to examine the spinal fluid of the entire group of patients with benign late syphilis.

The fact that almost twice the number of patients in the control group as in the experimental group had neurosyphilis (40.4 per cent as against 21.4 per cent) indicates that there may be a difference in

15. O'Leary, P. A., and Rogin, J.: Late Cutaneous Syphilis, Am. J. Syph. **16**:98, 1932.

16. Konrad, J.: Lues gummosa und Liquorveränderungen, Arch. f. Dermat. u. Syph. **162**:102, 1930.

17. Grschebin, S.: Beitrag zur Frage nach der Entstehung der Neurolues, Arch. f. Dermat. u. Syph. **159**:284, 1930.

18. Merenlender, J.: Gibt es einen Antagonismus zwischen Haut- und Metalues? Zentralbl. f. Haut- u. Geschlechtskr. **43**:1, 1932.

immunity in the patients who have benign late syphilis. If this phenomenon is due to a difference in immunity, it must be considered that the allergic state is established early in the course of the disease, i. e., before involvement of the nervous system by the spirochete occurs. This difference in the defensive powers of the body, rather than the allergic manifestations themselves, accounts for the partial protection of the neuraxis. This protection is at best only partially efficient, and with an incidence of asymptomatic neurosyphilis that is equal to 1 of 5, the necessity of performing routine lumbar punctures in all cases of benign late syphilis is obvious.

SUMMARY AND CONCLUSIONS

Fifteen (21.4 per cent) of 70 patients who had late mucocutaneous or osseous syphilis and whose spinal fluid was examined had neuraxis involvement. Seven (46.7 per cent) of the 15 had symptomatic neurosyphilis, and 8 (53.3 per cent) had asymptomatic neurosyphilis.

Approximately 40 per cent of a control group of over 700 patients representative of the clinic population as a whole had neurosyphilis.

From the material gathered from the literature and from the present analysis, it may be conservatively stated that from 1 of 10 to 1 of 3 patients with late mucocutaneous or osseous syphilis have syphilis of the central nervous system.

Examination of the spinal fluid is definitely indicated for all patients with benign lesions of late syphilis.

1021 Provident Building.

COMPARISON OF OLD TUBERCULIN (KOCH) AND MODIFIED TUBERCULIN (MELLON AND BEINHAUER)

CUTANEOUS REACTIONS IN PERSONS WITH HYPERERGIC AND WITH ANERGIC TUBERCULODERMS

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In the opinion of most students the majority of sarcoids are considered to be a form of tuberculosis. Most patients with sarcoids usually fail to react to Mantoux tests with tuberculin even in high concentrations. This lack of reaction to tuberculin in the usual dilutions is sometimes a helpful diagnostic criterion in the diagnosis of sarcoid. J. Jadassohn, Martenstein, W. Jadassohn and many others, including some American authors,[1] explained this lack of reaction as a positive specific tuberculin anergy connected with the presence of anticutins in the blood serum and in the tissues of patients with sarcoids.

A new and different explanation for the pathogenesis of sarcoids and for the negative reaction to tuberculin in patients with these diseases was recently advanced by Mellon and Beinhauer.[2] They reported that they were able to recover from one Negro patient with noncaseating tuberculosis a "partially acid-fast actinomycotic organism" [2a] and from another patient a "diphtheroid bacillus containing strongly acid-fast granules." [2b] They considered both these types to be an integral part in the life cycle of the tubercle bacillus and to be dissociants of Koch's bacillus.

From the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital, Columbia University.

Cases 4 and 5 were included in this series with the permission of Dr. Paul Gross.

1. Sulzberger, M. B.: Sarcoid of Boeck (Benign Miliary Lupoid) and Tuberculin Anergy, Am. Rev. Tuberc. **28**:734, 1933. Sulzberger, M. B., and Wise, F.: Tuberculin: Newer Dermatological Considerations and Reasons for Its More General Use in Diagnosis, M. Clin. North America **14**:1555, 1931. Sulzberger, M. B., and Goodman, J.: Tuberculoderms, ibid. **20**:995, 1936.

2. Mellon, R. R., and Beinhauer, L. G.: (*a*) The Pathogenesis of Noncaseating Tuberculosis of the Skin and Lymph Glands, Arch. Dermat. & Syph. **36**:515 (Sept.) 1937; (*b*) Pathogenesis of Noncaseating Epithelioid Tuberculosis of Hypoderm and Lymph Glands, ibid. **37**:451 (March) 1938.

TABLE 1.—*Comparison of Reactions to Various Concentrations of Old*

Number	Race	Clinical Diagnosis	Histologic Diagnosis	1:1,000,000			1:100,000			1:10,000		
				Old Tuberculin (Koch)	Modified Tuberculin		Old Tuberculin (Koch)	Modified Tuberculin		Old Tuberculin (Koch)	Modified Tuberculin	
					Human	Avian		Human	Avian		Human	Avian
1	Negro	Sarcoid Boeck	Sarcoid Boeck	—	—	—	—	—	—	—	—	—
2	White	Sarcoid Boeck	Sarcoid Boeck	—	—	—	—	—	—	—	—	—
3	White	Sarcoid Boeck	Sarcoid Boeck simulating lupus vulgaris	—	—	—	—	—	—	±	—	—
4	Negro	Sarcoidosis	Sarcoid Boeck	—	—	—	—	—	—	±	—	±
5	Negro	Sarcoid Boeck	Sarcoid Boeck	—	—	—	—	—	—	+	—	—
6	White	Sarcoid?	.....	—	—	—	—	—	—	—	—	—

TABLE 2.—*Comparison of Reactions to Various Concentrations of Old Tuberculoderms*

Number	Race	Clinical Diagnosis	Histologic Diagnosis	1:1,000,000			1:100,000			1:10,000		
				Old Tuberculin (Koch)	Modified Tuberculin		Old Tuberculin (Koch)	Modified Tuberculin		Old Tuberculin (Koch)	Modified Tuberculin	
					Human	Avian		Human	Avian		Human	Avian
7	White	Lupus vulgaris	.....	+	(+)	±	+(+)	+	—	+	(+)	+
8	White	Lupus vulgaris	Lupus vulgaris	+	—	—	+	—	—	+	—	+
9	White	Rosacea-like tuberculid	.....	—	(±)	—	—	—	—	±	—	—
10	White	Rosacea-like tuberculid	Rosacea-like tuberculid	—	—	—	—	—	—	—	—	+
11	White	Rosacea-like tuberculid	.....	—	—	—	+	—	—	++	—	—
12	White	Rosacea-like tuberculid	Follicli s	—	—	—	(±)	—	—	(±)	—	—
13	White	Lewandowsky? Rosacea?	.....	—	—	—	—	—	—	+	—	—
14	White	Papulonecrotic tuberculid	.....	—	—	—	—	—	—	—	—	—
15	White	Erythema induratum (Bazin)	.....	—	—	—	—	—	—	—	—	—
16	White	Granuloma annulare ? Lupus erythematosus?	.....	(±)	±	—	+	—	—	+	+	±

Tuberculin (Koch) and to Two Modified Tuberculins in Patients with Sarcoid

1:5,000			1:1,000			1:500			1:100			1:10		
Old Tuberculin (Koch)	Modified Tuberculin		Old Tuberculin (Koch)	Modified Tuberculin		Old Tuberculin (Koch)	Modified Tuberculin		Old Tuberculin (Koch)	Modified Tuberculin		Old Tuberculin (Koch)	Modified Tuberculin	
	Human	Avian		Human	Avian		Human	Avian		Human	Avian		Human	Avian
–	–	–	+	–	–	+:++	–	–	+++	–	–	++++	±	(+)
±	–	–	±	–	–	(+)	–	–	(+)	–	–	+++	–	–
+	–	–	+	–	–	+:++	–	–	++	(+)	–	+++	+	–
+	–	–	+:++	–	–	+:++	–	–	++: +++	–	–	++++	–	–
+:++	–	–	++	?	–	++	(±)	–	..	..	..	..	..	..
–	–	–	–	–	–	+	–	–	+:++	–	–	+++(+)	±	–

Tuberculin (Koch) and to Two Modified Tuberculins in Patients with Other Than Sarcoid

1:5,000			1:1,000			1:500			1:100			1:10		
Old Tuberculin (Koch)	Modified Tuberculin		Old Tuberculin (Koch)	Modified Tuberculin		Old Tuberculin (Koch)	Modified Tuberculin		Old Tuberculin (Koch)	Modified Tuberculin		Old Tuberculin (Koch)	Modified Tuberculin	
	Human	Avian		Human	Avian		Human	Avian		Human	Avian		Human	Avian
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
++	–	–	..	..	..	..	..	..	..	..	..	..	..	..
+	–	–	++	–	–	++	±	–	++	+:++	±	+++	++:+++	±
(+)	–	–	+:++	–	–	++	–	–	+++: ++++	+	++	++++	–	+:++
+:++	–	–	++	+:++	(±)	+++	+:++	(±)	..	..	..	..	..	..
+	–	–	+:++	(±)	–	++	(±)	–	++: +++	(+)	–	++++	++	–
(+)	–	–	+:++	±	–	++	±	–	++: +++	+	–	++++	+:++	(+)
–	–	–	–	–	–	–	–	–	–	–	–	–	–	(±)
–	–	–	–	–	–	–	–	–	(±)	–	+	++(+)	–	+
+:++	–	–	++	±	–	..	..	..	..	..	..	..	..	..

Mellon and Beinhauer concluded from these observations that the infection in sarcoid is caused by the critical rough form of the tubercle bacillus, which is avirulent or of lowered virulence, and that later these micro-organisms become dissociated into one of the non-acid-fast culture phases. On this basis they explained that patients with sarcoids often show less than normal reaction to old tuberculin, which is an extract of the acid-fast forms. This hypothesis is supported by the fact that Mellon and Beinhauer found that, although their patients gave negative reactions to intradermal tests with old tuberculin (Koch) in dilution of 1 : 1,000, they gave positive reactions to cutaneous tests with tuberculin prepared from a critical rough form of the bacillus.

In order to study this problem further, Dr. Marion B. Sulzberger suggested that I investigate a number of cases of sarcoids and of other unequivocally tuberculous cutaneous lesions simultaneously with old tuberculin (Koch) and with two specimens of freshly prepared tuberculin (Mellon and Beinhauer) made from critical rough forms of the tubercle bacillus (the latter were placed at the disposal of Dr. Sulzberger by Dr. Beinhauer). These two tuberculins represent strains from a human and an avian critical rough form.

At the outset I tested a guinea-pig that previously had been sensitized by infection with BCG and was found to be strongly hypersensitive to cutaneous tests with old tuberculin. I injected intracutaneously into this animal 0.1 cc. of old tuberculin (Koch) of a concentration of 1 : 900. This caused a strongly positive reaction at the site of the injection after forty-eight and seventy-two hours. The modified tuberculins made from the human and from the avian critical rough forms of the tubercle bacillus were injected into this animal in concentrations of 1 : 1,000 and 1 : 100. The reactions to these two tuberculins were entirely negative.

I then compared the reactions to old tuberculin and to these two modified tuberculins in 6 cases of sarcoid. Three of the patients were Negroes, and 3 were white. In 5 of the 6 patients the clinical diagnoses were verified by histologic examination.

As is to be seen from table 1, and contrary to the findings of Mellon and Beinhauer, none of our patients with sarcoid reacted to either one of the two modified tuberculins in dilutions of 1 : 1,000,000, 1 : 100,000, 1 : 10,000, 1 : 5,000 or 1 : 1,000 (the plus-minus reaction to a 1 : 10,000 dilution in case 4 was most probably a "traumatic" reaction). Even with the higher concentrations, i. e., 1 : 500, 1 : 100 and 1 : 10, I could elicit no definite reaction with the two modified tuberculins but only mild reactions, plus-minus or 1 plus, in 4 patients. Furthermore, there was no parallelism in the reactions to the human and the avian tuberculins. On the other hand, I did get reactions in several cases to old tuberculin in dilutions of 1 : 10,000 and more conspicuous reactions with the higher concentrations.

In addition to these cases of sarcoid, I tested 10 patients with other tuberculoderms. As seen in table 2, the reactions in those cases were rather irregular. Sometimes the higher concentrations of the Mellon and Beinhauer tuberculins produced weaker reactions than did the more diluted ones (paradox reactions). A comparison of the two modified tuberculins showed no correspondence; i. e., I was not able to confirm with my tests the assertion that the tuberculin made from a critical rough avian strain is not distinguishable from that derived from a critical human strain. On the other hand, I noticed in some patients equal reactions to old tuberculin and to one or both of the modified tuberculins.

SUMMARY

In 6 cases of sarcoid of Boeck I was not able to elicit reactions with two special tuberculins made, respectively, from critical rough avian and critical rough human strains of the tubercle bacillus, in concentrations of 1 : 1,000 or even in higher concentrations. This finding stands in apparent contradiction to the reports of Mellon and Beinhauer.

In 10 cases of various other tuberculoderms there was no parallelism between the reactions produced by these two modified tuberculins.

In some cases of tuberculoderms equal degrees of reactions to old tuberculin and to one or both of the modified tuberculins were noted, and in other cases there was no correspondence between reactions to old tuberculin and those to the modified tuberculins.

My findings do not support the theory that sarcoids are due to a critical rough form (nonacid-fast dissociant) of a tubercle bacillus.

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EFFECT OF ULTRAVIOLET RADIATION ON ROENTGEN RAYS

DO ULTRAVIOLET RAYS HAVE A DELETERIOUS EFFECT ON ROENTGEN RAYS WHEN APPLIED TO THE SKIN?

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Cutaneous Irritants Have a Detrimental Effect on Roentgen Ray Therapy.—The question is still unsettled as to whether ultraviolet radiation from natural or artificial sources has a deleterious or complementary effect on skin which has been exposed to it in conjunction with roentgen rays. MacKee [1] praised the judicious use of roentgen therapy in the treatment of acne but advised against the concomitant use of stimulating remedies, such as sulfur and mercury ointments, sulfur lotions, resorcinol lotions and other similar mild cutaneous irritants. He stated that exposure to erythema doses of ultraviolet rays and excessive sunlight is not advisable while the patient is receiving roentgen ray treatments. Many dermatologists questioned by one of us (F. A. E.) have concurred in MacKee's contentions, and they have cited cases in which roentgen ray dermatitis developed after roentgen therapy in doses which they considered to be suberythema, plus exposure to sunlight and/or irritating topical applications.

Lambadaridis [2] stated that after a single exposure to roentgen rays the patient must be protected for the next six months from wounds, infections and especially exposure to sunlight and other forms of ultraviolet radiation. He stated that some children were given, for tinea of the scalp, a correct (?) epilating dose of roentgen rays, which caused permanent alopecia. He was of the opinion that the children may have received an actinic dermatitis from the intense sun rays on the coast of Greece, and this plus the roentgen treatment had destroyed the hair follicles.

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1. MacKee, G. M.: X-Rays and Radium in the Treatment of Diseases of the Skin, ed. 3, Philadelphia, Lea & Febiger, 1938, p. 406. MacKee, G. M., and Andrews, G. C.: The Ultraviolet Ray as a Prophylactic Against Radiodermatitis, J. A. M. A. **85**:1715 (Nov. 28) 1925.

2. Lambadaridis, A.: Biologische Effekt bei kombinierter Einwirkung von Röntgen- und Sonnenstrahlen, Radiologica **2**:206, 1938.

Ultraviolet Radiation Has a Favorable Effect on Roentgen Ray Therapy.—Sampson [3] considered roentgen and ultraviolet rays as physiologic complements in therapeusis. He stated that the stronger the actinic ray reaction, the more stimulating it is to growth of hair and that one or two "good erythemas" due to ultraviolet radiation are usually sufficient to arrest alopecia caused by roentgen rays. He stated the opinion that after ultraviolet ray dermatitis the falling out of hair is checked, that there is a stimulation of the hair follicle, which results in an extra rapid growth of normal hair, that lanugo hair often becomes more abundant and increases in size and, in some cases, that even the pigment returns. He demonstrated by experiments on patients that previous exposure to actinic rays increased the tolerance to subsequent erythema and higher doses of roentgen rays.

Traub [4] gave ultraviolet ray treatment to patients at the end of courses of roentgen therapy in an effort to efface the scarring and to preclude future untoward roentgen ray sequelae. The treatments were given in sufficient amounts to cause second degree erythema and thorough peeling of the skin. Traub also used the two forms of therapy alternately and stated the opinion that this resulted in more rapid improvement, without the risk of roentgen ray dermatitis.

Rulison [5] gave a course of ultraviolet ray treatments with a Kromayer lamp to an area of skin which had been exposed to "four and a half skin units" of unfiltered roentgen rays. A filter had been omitted by mistake. The ultraviolet radiation was given immediately after the roentgen ray treatment. He stated that the treatments with the lamp prevented a severe reaction. However, since the radiation was given through a 2.5 cm. portal, a severe reaction following the exposure to the dose given would not necessarily be expected.

"Roentgen Ray Skin" Due to Natural and Artificial Lights.—It is well known that actinic rays will cause "roentgen-ray-like" changes in the skin, consisting of atrophy of the epidermis, abnormal pigmentation or hyperpigmentation, dilated capillaries, senile elastosis, keratosis and even malignant degeneration. This type of change occurs at an early age in patients with xeroderma pigmentosum and later in persons subjected to excessive exposure to the elements, for example, seamen and farmers.

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3. Sampson, C. M.: Ultraviolet and X-Ray as Physiologic Complements in Therapeusis: A Newly Established Clinical Treatment, Am. J. Roentgenol. **9**:570, 1922.

4. Traub, E. F.: The Treatment of Acne by the Combined Use of the X-Ray and the Mercury Quartz Light, M. J. & Rec. **122**:90, 1925.

5. Rulison, R. H.: Prophylaxis of Roentgen-Ray Overdosage, J. A. M. A. **83**:1505 (Nov. 8) 1924.

Schuermann [6] reported 2 cases of "roentgen ray skin" in patients who had never received any roentgen rays. One patient had received radiation therapy with a Finsen lamp over a long period for lupus vulgaris. The other patient was treated with radiation from a quartz mercury vapor lamp for many years for eczema. No porphyrinuria was found.

The Combined Use of Roentgen Rays and External Irritants, Including Light Rays.—Simpson [7] in 1931 reported a technic for treating acne which consisted essentially of giving a third of an erythema dose [8] of roentgen rays every ten days and an erythema dose of ultraviolet rays every ten days. Thus the patient was treated every five days with the alternate modes of therapy. In 1939 we examined 11 patients who had received ten to sixteen (average, thirteen and a half) one-third erythema doses of roentgen rays and during the same period of time had also received four to twenty-one (average, ten and a half) erythema doses of ultraviolet rays. All of the patients also applied to the treated areas the following: 7.5 Gm. each of prepared chalk, glycerin, zinc sulfate, sulfurated potash and precipitated sulfur (6.25%) and orange flower water to make 120 cc. Directions: Lotion. Apply at night.

This was considered to be a two ply (6.25 per cent) acne lotion, and the active ingredients were increased up to six ply (20 per cent) as the tolerance of the patient's skin permitted. The chalk was omitted from the stronger preparations.

When treatment was started the ages of the patients varied from 14 to 36 (average, 26). The time from the termination of treatment to the reexamination was from three to eight (average, four and one-half) years. Nine patients had had subsequent roentgen and actinic ray therapy after the original course of treatments. None of the patients showed any evidence of roentgen ray dermatitis; in fact, in half of the patients there was an excess of oil on their faces, and in most of the patients some acne lesions still developed. In the 2 youngest patients there were enough lesions to be objectionable. This routine of therapy has been replaced in the past few years by a technic of giving approximately 70 r weekly. We have continued to use the modified white lotion concurrently, without any ill effects.

COMMENT

In our opinion the roentgen therapy has simply an additional action on actinic effect on the skin; for instance, if "R" represents the

6. Schuermann, H.: "Röntgenhaut" ohne Röntgenbestrahlung, Dermat. Wchnschr. **105**:945, 1937.

7. Simpson, C. A.: Observations in Five Hundred Cases of Acne, Treated with 2,432 Exposures of X-Ray, Virginia M. Monthly **58**:535, 1931.

8. Dosage was based on the physical formula as described by MacKee.

$$\frac{3 \text{ ma.} \times (90\text{KV})^3 \times 3 \text{ min.}}{(10 \text{ in.})^2} = 1 \text{ erythema dose}$$

permanent or late roentgen ray effect and "A" the permanent actinic change on the skin, then the total late changes will equal "R" plus "A." When "R" and "A" are given simultaneously, alternately or later, neither exerts a beneficial or deleterious action on the other but only a summation of one plus the other.

What is the explanation for the difference of opinion as expressed in the literature? MacKee's conclusions were based on data in the era before the roentgen unit was defined and apparently when dosage was inaccurate. Lambadaridis' discussion seems fairly convincing, but his dosage of radiation was not stated, nor were his standards of units expressed. His statement that the patient who receives a single roentgen ray exposure must be protected for six months from all external irritants does not seem to be justifiable. We believe that Sampson apparently has overestimated the value of actinic rays. Every dermatologist will no doubt agree that ultraviolet ray therapy hardly possesses all the properties Sampson claims for it, such as stopping the loss of hair and promoting the change of lanugo hair to the terminal type.

Traub [9] stated that after fifteen years of giving roentgen ray therapy in conjunction with ultraviolet ray treatment he has not seen any harmful effects in the skin. He advised against giving both types of therapy on the same day, as he stated the opinion that this will definitely increase the reaction to both agents.

SUMMARY

It is our opinion that the former lack of adequate accurate measurements of dosage, mistakes in technic and overdosage are the main causes for roentgen ray sequelae and not a concomitant actinic dermatitis or/and a dermatitis due to external irritants.

The late cutaneous changes due to the combined application of roentgen rays and actinic rays are usually a summation of one plus the other, and the combined use of the two modes of therapy does not accentuate the effect of either agent.

The mechanical formula of MacKee is adequate for varying dosage once a standard in roentgens or erythema doses is determined, but there is a decided variation in the output of tubes with the same voltage, milliamperes, distance and time.

This combined method of therapy should be repeated with all factors controlled by modern methods and standards of measuring roentgen ray dosage. For over two years we have used strong sulfur lotions in conjunction with accurately measured roentgen therapy in the treatment of acne, without any evidence of roentgen ray sequelae.

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9. Traub, E. F.: Personal communication to the authors.

THE "SPIRITUAL" VALUE OF SYPHILIS

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Thirty years ago claims for the spiritual and moral value of syphilis were upheld by many "good people." In 1911 in the state of New York the passage of a law was almost secured to penalize persons responsible for announcements that venereal diseases are curable. It was argued that such information would help to make vice safe and would therefore promote immorality. Much of that attitude still exists and is the basis for much opposition to all education for venereal prophylaxis.

A friend, who is much interested in such education, restated to me all the objections to such education which had come to his notice. He knew of my successful opposition to the passage of the bill referred to, and he also knew of my amoral attitude to every aspect of sex. He asked me to answer the objections which he had relayed to me. Herein I give his version of the objector's attitude and my reply. No argument will be made. There will be only the dogmatic statements of a modern amoral scientist in reply to the equally dogmatic contrary assertions of moralists.

1. "Venereal prophylaxis is immoral."

The answer that any one makes to that assertion will depend on several factors. If the answer is determined by the compulsions of a "split personality," it will be either a positive and emphatic "yes" or "no." If the answer is made by a well unified personality, that is, by one who at the same time is well informed about the history and psychology of morals, then the question will receive no direct answer. The completely scientific attitude toward sex and everything human is thoroughly amoral. From this point of view all moral judgments and values, whether old or new, are the symptomatic product of a so-called "split personality" or of the imitation of such. That is to say, all such moral judgments and values are a consequence of an inner conflict of impulses, with varying degrees of approach to a pathologic intensity. This attitude has its beginning in the avoidable delusional fears and artificial lures that all moral training tends to implant in infancy and childhood.

2. "Venereal prophylaxis encourages promiscuity."

That seems important to all psychoneurotic moralists who rationalize their emotional indigestion in terms of ascetic morality. Some who believe in "new morals for old" blindly assume this to be beneficial. Such moralists are usually obsessed with the idea that sexual relations,

under any of their "fifty-seven varieties" of conditions, must be moral or immoral and therefore must be harmful or beneficial to the parties concerned, to their everlasting soul and to society. For ascetics, that "spiritual" injury is usually thought of as being remote and indirect, inflicted by means of damage to a hypothetic soul. Those who are more healthy minded, psychologically more mature and intellectually better informed will assume that promiscuity in itself is neither injurious nor beneficial to the person or to the race. Such conclusions are to be made according to the actual or probable physical or mental consequences, which are the varying product of numerous associated conditions. These consequences are judged according to the operation of known "natural laws" and in the light of the alternatives. All is relative. Promiscuity which spreads venereal disease is less desirable than that which does not. Promiscuity which is so conditioned that it does not either promote venereal disease or intensify the conflicting impulses (like those of a dual personality) is preferable to a sanctified monogamic relation which produces infected offspring or spreads syphilis by non-sexual methods and at the same time increases psychologic morbidity. Sexual relations under identical physical conditions may have the effect of retarding or of accelerating the psychologic maturing of one or both parties concerned or of promoting a psychologic regression. These results will be determined by the psychologic preparedness (degree of objectivity) of the parties concerned and by the environmental factors that are coordinated with that predisposition. It is according to these realistic (psychologic and physical) consequences of sexual relations that the amoralist passes his judgment on the relative merits of differing lines of conduct. For him nothing is approved or disapproved by means of an abstraction from all the causes and consequences of the whole situation.

3. "Venereal prophylaxis will encourage men and women who now abstain from sexual relations for fear of venereal disease to extramarital sexual indulgence."

The fear of syphilis, purgatory or hell fire will not prevent the functioning of the sex glands. The only question is: How do they function? What are the consequences? Under great fear, it is possible to exclude all the physical facts of sex from consciousness and to delude one's self into thinking that the psychologic consequences are unrelated to physical sexual experience. Is the functioning of the glands autogenic or with a physical external stimulation? Is it physiologic or psychologic autoerotism, or homosexual or heterosexual indulgence? Men and women should be fully informed of the physical and psychologic consequences that flow from the functioning of their sexual glands. They should be taught to respect the "natural laws" of their own organism in its psycho-

logic as well as its physiologic aspects. It is more important that they adjust their lives and emotions to "natural laws" than to the moral superstitions of their neighbors. Emotionally toned artificial fear, whether of hell fire, venereal disease or moral condemnation, is an injury to mental health and is reprehensible to the same degree as the intensity of such fear. This is an injury to the person and to society, because the resulting emotional imbalance promotes antisocial behavior, even criminal acts and insanity. The responsibility for all such consequences and most of the changes observed in criminal psychology rest with the moralists who instil such artificial fears and deluding hopes and a corresponding disrespect for "natural law."

4. "Venereal prophylaxis is in bad taste and is unesthetic. Every time lovers embrace and use a prophylactic they will think in terms of disease and not of pleasure."

This statement will be true only if the persons have first been made psychoneurotically fearful by pathologic moralists, their following of moralists for revenue and the ignorant imitators of these. Unmarried lovers will find themselves further dissatisfied if, through the influence of the erudite infantilism of educators and moralists, they concentrate only on the pleasures of the moment. If, however, a greater degree of healthy mindedness and psychologic maturity have been allowed to develop, then the lovers will give relatively little attention to the pleasures of the moment and will concern themselves more with the remote consequences which their present sexual activities will produce on their whole organism, both the physical and the psychologic effects. The mental infants in mature bodies, like their mentors the pathologic moralists, will not understand what that means. If they prefer their momentary esthetics to freedom from lifelong emotional disorders and venereal disease, then I suppose they can have it, since no one can force them to use prophylactics or grow up mentally.

5. "Venereal prophylaxis is unnecessary. Only the stupid and ignorant and those who deserve to be infected ever catch gonorrhea or syphilis."

This statement is wholly untrue. Under the influence of temporary sexual suppression, so great a passion develops that it compels one to ignore whatever "intelligence" one may have had on the subject. Furthermore, if syphilis became more prevalent, more people would take it for granted and become more careless, and there would be an ever increasing number "innocently" infected, through drinking utensils, towels and toilet facilities. It is this type of infection which justifies the appelation "social disease."

6. "Venereal prophylaxis is against the economic interest of physicians. Syphilis and gonorrhea are about the only diseases left from which the general practitioner can make a little money."

That statement is not true, but it may be a matter of considerable influence with some doctors. Those who are thus influenced are, of course, the ones who are of least credit to their profession. Those who frankly avow such a position will be few. Physicians who wish to promote venereal disease in others in order to promote their own welfare should be removed from the profession. Many who are motivated by such considerations will conceal their real aims by adopting other less honest arguments, such as are here being answered. In such cases, their choice of position and of argument will usually be dictated by some psychoneurotic compulsion. They should seek a mental cure rather than an answer to their arguments.

7. "Venereal prophylaxis is against the teachings of the church. The wages of sin is death. As you sow so shall you reap. Prophylaxis permits men and women to escape the penalty of sin."

This is the same old, old objection that at some time has been made to every advance in every branch of secular education, to the methods of medical healing, to the alleviation of pain and to all prophylaxis and hygiene in the beginning. Vice must not be made safe by making child bearing painless or by making it possible to have sexual intercourse without sorrow. At sometime or other all diseases have been regarded as God's punishment for the disobedience of His commands and the failure to support His clergy. Now, as in every past historical period, healthy-minded progressive people have had to combat this old fundamentalist and ascetic morality. Always the implication is that one can only merit heaven by making earthly life a vale of tears. For further answer, see the preliminary remarks and my answer to the first objection.

8. "Venereal prophylaxis is a poor policy for a city, state or federal health department to adopt, because if taxpayers and lawmakers who appropriate the money for this type of education understand that it will give foolish people protection and will encourage 'immorality' and promiscuity, they will not make large appropriations."

That is exactly the same argument that was made against every basic advance in the physical sciences, the establishing of secular schools and state universities and all laws for sanitation. All this interfered with some fundamentalist's conception of morals. It did result in smaller appropriations and will do so again, but these were better than none at all. The larger contributions and appropriations come with a later appreciation of the social benefits. There are many fundamentalists who still have that attitude toward secular education; I have heard them called "funnymentalists." With venereal prophylaxis it is as with other education. Even the average man will eventually discover that venereal disease is to be regarded as other contagious diseases and that it is cheaper and better to prevent disease than to cure it, even though the disease is a venereal one.

9. "Prophylaxis and birth control will (*1*) remove all barriers and restraints on the impulses that make for 'free love,' polygamy and polyandry, causing men and women to be debauched and think of nothing but sex and lasciviousness and (*2*) cause civilization and decency to be lost."

Let me counter the second proposition first. Only a sexual maniac with a morbid feeling of guilt over his own sexual peccadillos could invent the theory that civilization and any particular form of sexual expression are identical. It is indeed true that for the better mental hygiene, a new attitude toward and a new understanding of sexual psychology are necessary. In that sense sex is important. However, the preservation and glorification of the puritanic symptoms of the general emotional imbalance are not the best but the worst part of civilization.

If a knowledge of venereal prophylaxis and birth control does result in any sudden outbreak of sexual excesses, it will not be due to that education. On the contrary, it will only mean the release of impulses that were already there and suppressed with morbid intensity. These were made morbid by puritanic leaders, through their effort to control the sexual life of children by means of artificial fears and delusional hopes, instead of unemotional realistic education for understanding and respecting only "natural laws" even as to sex. The knowledge of birth control and venereal prophylaxis does not create that morbidity. It was preexistent. Only its normal heterosexual expression was inhibited by artificial fear. It may be true that this new knowledge in some instances will increase the more normal indulgence at the expense of perversion. It will not increase lasciviousness but in time is apt to reduce it. I am not so much concerned with the existing abnormal type as I am with the emotional health of the coming generation. The giving of free, adequate and accurate information about even the psychology of sex, under circumstances which increase their respect for "natural laws" (including those of psychosexual maturing and psychosocial evolution), can be made a great aid to mental hygiene and so reduce the antisocial types now produced by morbid moralists.

FREQUENCY OF CERTAIN DERMATOSES IN HIGH SCHOOL GIRLS

REPORT ON 4,700 GIRLS

IDA J. MINTZER, M.D.
JAMAICA, N. Y.

Comparatively little attention has been given in medical examinations of school children to the common dermatoses, and a survey of the literature reveals no statistics on this subject for girls of high school age. The psychologic importance of even trivial cutaneous blemishes to adolescent girls, not to mention the possible debilitating effect of some of these minor dermatoses on the general health, should make them of greater interest to the dermatologist and to the general practitioner than their intrinsic importance might otherwise seem to warrant.

The girls examined in this series were between the ages of 13 and 18. Acne, as might be expected, was by far the most prevalent dermatosis, affecting 8.8 per cent of all those examined and comprising 60.3 per cent of all dermatoses found. The complete list of dermatoses, in the order of frequency, is as follows:

Dermatosis		Number of Cases
Acne		384
Warts		48
Common warts	5	
Plantar warts	41	
Filiform warts	2	
Nevi		48
Naevus spilus	12 (more than 25 to a person)	
Verrucous nevus	9	
Pigmented nevus	7 (palm sized or larger)	
Naevus flammeus	6 (palm sized; involving lower lids in 2)	
Hairy nevus	5 (2 to 4 inches [5 to 10 cm.])	
Naevus araneus	5 (many lesions)	
Hemangioma	4	
Dermatophytosis (clinical diagnosis only)		45
Anomalies of the tongue		16
Geographic tongue	10	
Scrotal tongue	6	

From the Queens General Hospital and Jamaica Hospital, Dr. Ida J. Mintzer attending dermatologist.

Dermatosis		Number of Cases
Pigment anomalies		14
Lentigo	10	
Vitiligo	3	
Café au lait spots	1	
Seborrheic eczema (4 of scalp)		10
Herpes simplex		9
Tinea circinata		8
Ichthyosis		7
Hypertrichosis		6
Eczema (generalized)		4
Impetigo		4
Roentgen ray dermatitis (following treatment of nevi)		4
Neurodermatitis (3 generalized)		4
Erythema		3
Keratosis pilaris		3
Keloids (extensive, mostly due to burns)		3
Perlèche		3
Comedos		2
Allergic dermatitis of lip and surrounding skin		2
Psoriasis		2
Subcutaneous fibroids		1
Dermatitis venenata (poison ivy)		1
Lymphangitis		1
Urticaria		1
Multiple benign cystic epithelioma		1
Acute burn		1
Web toes		1
Hyperhidrosis		1
Onychogryposis		1

For purposes of comparison, the dermatoses most frequently found in my series are lisited in the accompanying table beside those most frequently found by Goodman,[1] in a large series covering patients of all ages; by Sohrweide,[2] who surveyed 138,960 cases from the Stuyvesant Square Hospital in New York; by Arena and Harris,[3] in the records of 80,000 children under 15 years of age admitted to Baltimore hos-

1. Goodman, H.: Tinea: Second Most Prevalent Disease of the Skin, Arch. Dermat. & Syph. **23**:872 (May) 1931.

2. Sohrweide, A. W.: Recent Changes in Dermatologic Diagnosis, Arch. Dermat. & Syph. **30**:260 (Aug.) 1934.

3. Arena, J. M., and Harris, R. R.: Frequency and Distribution of Diseases in Children, South. Med. & Surg. **97**:520 (Sept.) 1935.

pitals; by Alderson and Reich [4] and by Gilman,[5] each from records of the students' health service at a large university, and by Meyers,[6] who reported the frequency of diseases in 7,352 boys in continuation school.

None of these series is strictly comparable to mine, as all of them (except that of Meyers) included only persons requesting treatment, and medical care is rarely sought for some of the common dermatoses. Only a small section of Meyers' report is devoted to statistics on cutaneous diseases, and his list is not extensive; it is included, nevertheless, because it covers young adolescents within the same approximate age limits as those in my series and is not confined to those seeking medical care. The valuable earlier statistical survey [7]

Comparison of the Dermatoses Most Frequently Found in Persons at Various Ages

Goodman	Sohrweide	Arena and Harris	Alderson and Reich	Gilman	Meyers	Mintzer *
All Ages	All Ages	Under 15 Years of Age	College Age	College Age	High School Boys	High School Girls
Eczema	Dermatitis venenata	Eczema	Tinea	Tinea	Acne	Acne
Tinea	Eczema	Impetigo	Pyoderma	Acne	Eczema	Warts
Scabies	Acne	Scabies	Dermatitis venenata	Seborrhea	Warts	Nevi
Psoriasis	Tinea	Allergic dermatitis	Seborrhea	Warts	Scabies	Dermatophytosis
Seborrhea	Seborrhea	Pediculosis	Acne	Pyoderma	Herpes simplex	Seborrhea
Impetigo	Impetigo	Ringworm	Warts	Dermatitis venenata	Trichophytosis	Herpes simplex
Urticaria	Warts	Urticaria	Sebaceous cyst	Eczema	Ichthyosis	Tinea
Dermatitis venenata	Scabies	Intertrigo	Urticaria	Pityriasis rosea	Psoriasis	Ichthyosis
Alopecia	Psoriasis	Angioma	Pediculosis pubis	Moles	Pityriasis rosea	Hypertrichosis
	Urticaria	Erysipelas	Herpes simplex	Herpes zoster		Eczema
	Alopecia	Miliaria				Impetigo
	Pruritus	Burns				Roentgen ray dermatitis
	Pediculosis	Dermatitis venenata				Neurodermatitis
		Herpes simplex				

* I have omitted from this list the anomalies of pigment and of the tongue, as these seem not to have been included in the other surveys. It seems likely, too, that some of the other investigators may not have included the common nevi.

of Crocker, Bulkley, Pollitzer (based on the figures of the American Dermatological Association over a period of nearly half a century) and the skin and Cancer Unit of the New York Post-Graduate Medical

4. Alderson, H. E., and Reich, A.: Incidence of Dermatoses in Student Health Service, Arch. Dermat. & Syph. **36**:57 (July) 1937.

5. Gilman, R. L.: Incidence of Skin Diseases in Student Health Service, Am. J. M. Sc. **188**:268 (Aug.) 1934.

6. Meyers, J.: Physical Findings in New York Continuation School Boys, Am. J. Pub. Health **21**:615 (June) 1931.

7. Goodman, H.: Statistics of Ten Most Common Skin Diseases, Based on Analysis of 973,090 Published Cases, Arch. Dermat. & Syph. **20**:186 (Aug.) 1929. Crocker, H. R.: Diseases of the Skin, ed. 3, Philadelphia, P. Blakiston's Son & Co., 1903, p. 1401. Bulkley, L. D.: Manual of Diseases of the Skin, New York, Paul B. Hoeber, 1898, p. 41. Pollitzer, S.: American Dermatological Association, J. Cutan. Dis. **32**:312 (April) 1914; **36**:294 (May) 1918.

School and Hospital have been purposely omitted, since the purpose here is to compare the frequency of dermatoses in adolescents with that in persons of other ages during approximately the same period.

It is interesting to note that Alderson and Reich pointed out that acne, although fifth in frequency on their list, is actually present in one half of all students of college age, although comparatively few seek medical care for this cause. Differences in the terminology and classification used in these statistical studies make it difficult to compare the order in the different age groups with absolute accuracy; but it is apparent that the adolescent period is distinguished especially by the increased frequency of warts in the early years, in addition to the expected frequency of acne, with tinea assuming greater importance in the later years of adolescence.

Clinical Notes

DERMATITIS DUE TO AQUAPHOR

Report of a Case

S. J. Fanburg, M.D., Newark, N. J.

Aquaphor has been used and is used extensively in this country and abroad as an ointment base. It has several advantages over other ointment bases in that it keeps indefinitely and is readily miscible with three times its own weight of water. It is particularly suitable for application to the scalp on account of the ease with which it may be washed out of the hair. It is stated by the manufacturers that aquaphor is a mixture of a group of alcohols and esters of cholesterol obtained from wool fat, 6 parts, in a petrolatum base, 94 parts. The constituents of the mixture are melted together at a certain temperature.

No reports of dermatitis due to aquaphor have come to my notice in the literature. Several cases of sensitization to wool and to wool fat have been reported by Lord,[1] Hertslet,[2] Ramirez and Eller [3] and Sulzberger and Morse.[4] Beerman [5] had a wool-sensitive patient who had a flare-up in her dermatitis due to the application of nivea cream, which is a perfumed mixture of aquaphor and water. There are no doubt many unreported or unrecognized cases of sensitivity to wool fat and possibly to aquaphor. Irritation, when it does occur, may be erroneously ascribed to other ingredients of an ointment rather than to its base unless patch tests to determine its exact cause are carried out. The following patient, whom I observed some time ago illustrates sensitivity to aquaphor and to the cholesterol esters contained in it.

REPORT OF CASE

X. B., a white man aged 35, a chiropodist, had pityriasis of the scalp, for which he had used an ointment consisting of 5 per cent salicylic acid and 5 per cent sulfur in petrolatum. He applied this ointment for several weeks and then began the use of one containing 5 per cent salicylic acid and 5 per cent sulfur in aquaphor. Within twenty-four hours after the application of this ointment he noticed a tightness and itching of the scalp, which was soon followed by swelling and vesiculation. The eruption spread to the face, eyelids and ears. The eyes were swollen shut, and the forehead and ears were covered with an erythematous vesicular eruption. The salicylic acid or the sulfur was suspected of being the offending agent. After

1. Lord, L. W.: Cutaneous Sensitization to Wool, Arch. Dermat. & Syph. **26**: 707 (Oct.) 1932.

2. Hertslet, L. E.: A Case of Allergic Dermatitis Due to Wool, South African M. J. **8**:182 (March 10) 1934; abstracted, Bull. Hyg. **9**:379 (June) 1934.

3. Ramirez, M. A., and Eller, J. J.: The "Patch" Test in "Contact Dermatitis" (Dermatitis Venenata), J. Allergy **1**:489 (Sept.) 1930.

4. Sulzberger, M. B., and Morse, J. L.: Hypersensitiveness to Wool Fat, J. A. M. A. **96**:2099 (June 20) 1931.

5. Beerman, H.: Personal communication to the author.

two days' treatment with boric acid compresses, the edema and vesiculation subsided, and an ointment was prescribed which contained 5 per cent boric acid and 10 per cent distilled water in aquaphor. Within two hours after he used this ointment the edema and vesiculation reappeared, the eyelids became swollen and the ears and scalp became acutely inflamed. With the aid of wet dressings the eruption again gradually subsided.

Patch tests were carried out to determine the ingredient of the ointments which caused the dermatitis. Aquaphor itself and any of the ointments containing it gave strongly positive reactions, consisting of vesicles and erythema, in twenty-four hours. Patch tests with petrolatum, hydrous wool fat, sulfur and salicylic acid all gave negative results. Patch tests were performed with the purified cholesterol esters and the petrolatum used in the manufacture of aquaphor. The cholesterol esters produced a vesicular reaction within twenty-four hours. It is interesting to note that the patch test with hydrous wool fat itself, the source of the cholesterol esters, gave negative results.

SUMMARY

A case is presented in which sensitivity to aquaphor and to the purified cholesterol esters used in the manufacture of aquaphor was demonstrated. The patient was not sensitive to wool fat from which the cholesterol esters are derived.

DISCOLORATION OF THE NAILS DUE TO NAIL ENAMEL

HAROLD SHELLOW, M.D., CHICAGO

With the advent of "improved" nail enamels and their new color shades, many more complaints have been ushered in concerning the effect these cream polishes have on the nails. More commonly now women have called attention to brittleness, splitting and peeling of the nails, especially at the ends, despite the fact that the customary polish removers, such as acetone and ethyl or amyl acetate, have been used. Various disturbances affecting the nails from the use of nail lacquers have been noted from time to time. I wish to report a both interesting and unusual observation relating to the effect this form of cosmetic has had on the nails.

REPORT OF A CASE

A woman complained of discoloration of the nails of the left hand of about four weeks' duration. She stated that the color, which at first had been a faint red, had gradually increased in tone until its present shade, which was a reddish brown. She had used a popular but not inexpensive nail enamel for some years and had been accustomed to remove the old polish with acetone every week to ten days and then to reapply a fresh coat. She had first noticed the discoloration on removing the polish one day but had reenameled the nails immediately. Each time the old polish had been removed the stain was noticed to have become darker. The nails of the right hand, except for an "acceptable" dryness and scaling of the ends, had been unaffected.

Examination showed a dark orange to reddish brown discoloration of all the nails of the left hand, more pronounced and deeper in color on the first, second

and third nails. The discolored areas were uneven in intensity and less involved on the most proximal and the lateral portions of the nails. The white lunulae were unaffected (these areas had never been enameled). Attempts to remove the stain with several different lacquer solvents failed, even with severe rubbing, but scraping the nails with a glass slide did accomplish some results. However, the keratin was pigmented to such a depth in some nails that it was felt unwise to scrape too deeply for fear of causing injury to the beds.

This asymmetric involvement, of course, was unusual, and in questioning the patient carefully it was brought out that she had been using a prescribed scalp lotion for the previous four weeks. It contained 0.25 per cent mercury bichloride, 1 per cent cholesterol, 2 per cent salicylic acid and 3 per cent resorcinol monoacetate in a 95 per cent grain alcohol vehicle. She had applied this to her scalp each night with her right hand, using a dripper bottle, and then had massaged with her left finger tips.

Apparently some ingredient contained in the scalp lotion had caused a solvent action on the pigment-bearing lacquer, which had permitted absorption of the dye into the keratin. No doubt the friction of the nails against the hair had aided in embedding the stain, and the force with which the longer fingers were used in massaging accounted for the darker color in those nails. For the same reason the peripheral portions were less affected.

185 North Wabash Avenue.

NICOTINIC ACID IN THE TREATMENT OF ACNE VULGARIS

FRANCIS W. LYNCH, M.D., ST. PAUL

One is hesitant to add to the long list of therapeutic agents for use in the treatment of acne, but the disease is so common and the therapeutic results are so mediocre that any help may be welcome. The oral administration of nicotinic acid was suggested by a co-worker's statement that seborrhea appeared to be favorably influenced by this drug. It was then given to 46 university students who had had no previous treatment for acne or no treatment for at least three months preceding their trial of this drug. The nicotinic acid was administered twice daily in the form of 50 mg. tablets taken after the morning and evening meals. No other treatment was used, and the students were given no advice as to diet or hygiene.

The only unpleasant reaction observed in this group of patients was transitory redness, burning or itching in the flush areas of the face, chest and arms. This reaction could usually be avoided by taking the drug immediately after meals.

Eight of the 46 patients failed to present themselves for reexamination. The remaining 38 patients were examined at three or four weeks and again at six to

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From the University of Minnesota, Division of Dermatology, Dr. H. E. Michelson, Director, and the Students' Health Service, Dr. Ruth Boynton, Director.

Part of the material for this study was furnished by The Upjohn Company, Kalamazoo, Mich.

eight weeks. In 6 (16 per cent) the results were classed as good and in 15 (39 per cent) as fair, and in 17 (45 per cent) no improvement was noted.

The improvement noted in 55 per cent of patients with acne is not particularly encouraging when one realizes that the disease is cyclic and self limited, so that in any series of patients with acne, whether treated or not, a considerable number will show improvement. However, the results in certain cases were so satisfactory that I thought this report was justified. Nicotinic acid cannot be regarded as a cure for acne, nor do I hold it responsible for all the improvement noted in these patients, but it is a simple and apparently harmless drug which appears to help.

I am unable to explain the mode of action of nicotinic acid, but it may be noted that it is one of the factors in liver, which has been repeatedly advocated in the treatment of acne, and there is some relation between nicotinic acid and the metabolic requirements of the staphylococcus. In a few patients the influence on the seborrheic oiliness of the face was most striking.

Abstracts from Current Literature

EDITED BY DR. HERBERT RATTNER

ESTHIOMENE—A FORM OF GRANULOMA INGUINALE. A. G. SCHOCH and L. J. ALEXANDER, Am. J. Syph., Gonor. & Ven. Dis. **23**:718 (Nov.) 1939.

The authors report 3 cases of granuloma inguinale associated with elephantiasis and ulceration of the external genitals. They conclude that esthiomene is a clinical entity resulting from various etiologic agents and that the syndrome may be present in cases of granuloma inguinale.

THE LAG IN REVERSAL OF BLOOD SEROLOGIC TESTS UNDER BISMUTH IN THE COURSE OF COMBINED CHEMOTHERAPY. H. BEERMAN, Am. J. Syph., Gonor. & Ven. Dis. **23**:724 (Nov.) 1939.

Studies to a certain degree have borne out the contention that bismuth may have some restraining effect on the arsenical drug in combined arsphenamine and bismuth syphilotherapy. Stokes and Beerman, in their study of trisodarsen (trisodium arsphenamine sulfonate) have obtained, for example, serologic reversal to negative reactions in 90 per cent of cases with this drug alone; while when it was used in combination with bismuth, the serum reaction became negative in three months or less in only 58 per cent of the cases.

The reasons for this possible effect of bismuth compounds may be found not so much in the deterrent action of bismuth on arsphenamine as in the possibility of reduced dosage, intentional or accidental, to eliminate toxicity or because of an inferior drug.

TRISODIUM ARSPHENAMINE SULFONATE (TRISODARSEN) IN THE TREATMENT OF CONGENITAL SYPHILIS. T. B. GIVAN and G. VILLA, Am. J. Syph., Gonor. & Ven. Dis. **23**:771 (Nov.) 1939.

Trisodarsen is a trivalent compound which is chemically known as trisodium arsphenamine sulfonate.

Stokes and Beerman were the first to report on this drug, confining their work to cases of early acquired syphilis.

This report deals with a clinical study of the drug in cases of congenital syphilis. The majority of the patients received the drug intravenously, though some were treated intramuscularly. No local reactions were observed. Trisodarsen was relatively well tolerated. Mild reactions, such as nausea and vomiting, occurred, as well as slight cutaneous eruptions in 3 cases and dermatitis exfoliativa in 1 case. Nitritoid reaction was observed in 1 case. No fatality occurred. Patients who had reactions after the administration of neoarsphenamine received trisodarsen without any ill effects.

The drug proved to be effective in the treatment of the various manifestations of congenital syphilis, as well as in producing a negative Wassermann reaction in 76 per cent of 121 patients who had had a positive reaction before treatment.

EARLY SYPHILITIC OSTEOMYELITIS WITH A REPORT OF TWO CASES. U. J. WILE and D. G. WELTON, Am. J. Syph., Gonor. & Ven. Dis. **24**:1 (Jan.) 1940.

Two cases illustrating extensive syphilitic osteomyelitis during the early period of (acquired) infection are presented. In these cases the condition responded satisfactorily to antisyphilitic therapy and showed evidence of complete recovery. Roentgenologic follow-up in 1 case showed no residua of the previous severe (skull) involvement.

THE MENSTRUAL CYCLE AND THE BLOOD SEROLOGIC TEST FOR SYPHILIS. N. R. INGRAHAM and V. R. MAYER, Am. J. Syph., Gonor. & Ven. Dis. **24**:23 (Jan.) 1940.

As a result of their studies, the authors concluded that the false positive reactions to serologic tests occurring in some women during the menstrual cycle must result from a peculiarity of the person or of the test and do not arise from any uniform changes in the blood of all women. If occasional exceptional cases occur, their incidence can be deduced only by studies of large groups, beyond the scope of this effort.

THE WASSERMANN TEST. XVII. THE EFFECT OF ANTISYPHILITIC DRUGS UPON THE WASSERMANN REACTION. D. L. BELDING, Am. J. Syph., Gonor. & Ven. Dis. **24**:29 (Jan.) 1940.

The reduction of the Wassermann antibody titer was recorded quantitatively during and after treatment of 233 syphilitic patients who were given various preparations of arsphenamine, mercury and bismuth.

In patients with late acquired syphilis an average reduction of the Wassermann antibody titer of 37 per cent was obtained with all the drugs except mercury (used alone), which gave 29 per cent.

The rate of serologic reduction was fairly uniform for all the drugs and reached a maximum at about the twelfth week after treatment. With arsphenamine therapy the serologic reduction in cases of early syphilis was nearly twice that in cases of late syphilis, and the response was more rapid. Bismuth gave the best serologic results in cases of cerebrospinal syphilis.

EMBOLIA CUTIS MEDICAMENTOSA. M. B. SULZBERGER and R. L. BAER, Am. J. Syph., Gonor. & Ven. Dis. **24**:50 (Jan.) 1940.

A case of severe embolia cutis medicamentosa is reported which was not caused by an antisyphilitic drug. The common mechanism in the production of the condition is the direct injection of the drug into the artery, as the result of a technical error. However, even with the correct technic of intramuscular injection, an occasional instance of embolia cutis medicamentosa has been reported. It is believed that in such cases the drug is injected into or close to the wall of an artery and that subsequently necrosis of the vessel wall takes place, thus releasing the "stored" drug into the lumen of the artery.

THE PATHOLOGY AND PATHOGENESIS OF SYPHILITIC PRIMARY OPTIC ATROPHY. J. E. MOORE and A. C. WOODS, Am. J. Syph., Gonor. & Ven. Dis. **24**:59 (Jan.) 1940.

The authors of this paper critically examined the recent literature on the pathology and pathogenesis of syphilitic primary atrophy of the optic nerve. It appears that this condition is not due to actual syphilitic inflammation of the optic nerves dependent on the presence therein of the causative organism. The newer theories as to its pathogenesis are discussed.

To the authors it seems probable that the pathogenesis of syphilitic primary atrophy of the optic nerve, so often (perhaps almost always) associated with tabes dorsalis, is identical with that of tabes dorsalis itself. This theory, in turn, is as yet unproved, though recent studies, especially in the field of nutrition, offer hope of its elucidation.

REUTER, Milwaukee.

LOCAL HEMORRHAGIC-NECROTIC SKIN REACTIONS IN MAN. (SHWARTZMAN PHENOMENON). J HARKAVY and A. ROMANOFF, J. Allergy **10**:566 (Sept.) 1939.

The Shwartzman phenomenon is a local cutaneous reaction (hemorrhagic necrotic lesion) following injections of homologous and heterologous filtrates of

various organisms as well as of unrelated antigen-antibody complexes. The first injection is intracutaneous and is termed the preparatory factor; the second is intravenous and is called the provocative factor.

The authors observed 3 patients, 1 with bronchial asthma, a second with hay fever and a third with dermatophytosis and sinus infection in whom developed hemorrhagic-necrotic lesions of the skin. In every case the preparatory factors originated from bacterial foci in infected sinuses and in 1 instance presumably from an additional fungous infection of both feet. The provocative factors consisted of homologous and heterologous proteins composed of bacterial vaccines and toxin filtrates and, in 1 case, antuitrin-S, an unrelated antigen-antibody complex.

Since the steps in the evolution of these lesions conform to the criteria postulated by Shwartzman for the production of the phenomenon described by him, the authors regard the hemorrhagic-necrotic lesions in these patients as clinical examples of the Shwartzman phenomenon.

THE PROPHYLAXIS AND TREATMENT OF POISON IVY DERMATITIS WITH AN EXTRACT OF RHUS TOXICODENDRON. L. ZIMMERMAN and L. BIRCH, J. Allergy **10**:596 (Sept.) 1939.

Individual histories were taken and examinations were made of 1,731 boy scouts, who remained for one or two weeks at a camp where the poison ivy plant (Rhus toxicodendron) flourishes with great vigor.

A group of 304 boys and adult leaders, 95 per cent of whom were between the ages of 12 and 17 years, were given prophylactic injections of a special extract of Rhus toxicodendron, prepared by extracting the plant with ether and then suspending the extracted material in a 1:1,000 dilution of olive oil. The dose varied from 0.25 cc. to 1 cc. Some boys received only one injection, and others received two injections at weekly intervals.

A history of previous susceptibility was given by 241 of the treated boys. Of these, poison ivy dermatitis developed in 146 while they were in camp, an incidence of 60.6 per cent. The general incidence in the camp for the reacquisition of the dermatitis during the study period among known susceptible subjects was only 47.6 per cent, showing a lessened immunity as a result of prophylactic injections rather than the acquisition of any immunity.

Eighty-nine boys in whom poison ivy dermatitis developed were treated with a 1:10,000 dilution of antigen. Patients were given one, two or three injections at daily intervals in doses of 0.25 cc. and 0.5 cc. Few of the patients treated had had the prophylactic injections. No local therapy was given. The results were unsatisfactory in 29 patients; 21 were relieved of the itch; 30 were improved, and in 9 the results were good.

THE TRANSFERENCE OF REAGINS IN BLOOD TRANSFUSIONS. W. P. GARVER, J. Allergy **11**:32 (Nov.) 1939.

The author observed 3 nonallergic recipients whose skin was passively sensitized after the transfusion of whole blood from allergic donors.

The first donor had perennial allergic vasomotor rhinitis, with seasonal exacerbations due to weed pollens. His skin was sensitive to house dust, chocolate, string beans, spinach and ragweed. He acted as a donor for 2 recipients.

Before transfusion the recipients were given cutaneous tests with all of the substances except house dust; the reactions were negative. After the transfusions of 500 cc. of blood, the recipients were again tested with the same substances; it was found that they reacted to ragweed, string beans and spinach. These substances gave positive reactions with the donor's blood by the Prausnitz-Küstner technic of passive transfer. The reactions in the recipients were maximum in four to five days and remained positive for about two weeks. After this time they were faint and difficult to interpret.

The second donor had late hay fever, and his skin was sensitive to house dust, orris root, horses and timothy and ragweed pollen. He acted as a donor for a

recipient in whom cutaneous tests gave negative reactions to the above allergens before transfusion. Fourteen hours after a transfusion of 500 cc. of whole blood, the recipient's skin showed slight reactions to house dust and ragweed. In four days the reactions were moderate to severe to all the allergens. On the sixth day the reactions were not as severe as they were two days previously.

No attempt was made in any of these cases to demonstrate clinical sensitivity.

NOTE ON ORAL POTASSIUM CHLORIDE THERAPY IN ASTHMA, HAY FEVER, URTICARIA, AND ECZEMA. DAVID HARLEY, J. Allergy **11**:38 (Nov.) 1939.

Oral potassium chloride therapy, in doses of 5 grains (0.32 Gm.) dissolved in a glass of water and given one-half hour before meals three times a day, failed to produce a significant degree of improvement in a group of 43 allergic patients. These included patients with hay fever, allergic rhinitis and asthma, 10 with each, 9 patients with urticaria and 4 patients with eczema. The average duration of treatment was from two to three and four-fifths weeks.

In 1 case of urticaria, in which there was moderate improvement, relapse occurred in four weeks. There was favorable response, however, to a course of sodium chloride tablets three times a day in water.

MENDELSOHN, New York.

NICOTINIC ACID IN THE TREATMENT OF ACRODYNIA. FREDERICK F. TISDALL, T. G. H. DRAKE and ALAN BROWN, J. Pediat. **13**:891 (Dec.) 1938.

Six infants ranging in age from 8 months to 2 years suffering from acrodynia were treated with nicotinic acid. Two forms of the drug were used, pure nicotinic acid and the monoethanolamine salt of nicotinic acid. No difference was found in the action of these two substances. The drug was administered parenterally in order to obviate any possibility of defective absorption from the intestinal tract. The first dose (20 mg.) was given intravenously, and subsequent doses of from 20 to 40 mg. were given intramuscularly twice daily. The only reaction noted was redness and blotching of the skin in 2 babies, occurring shortly after the injection and lasting only one-half hour. In a few cases the drug was given by mouth, 100 mg. a day being given to the younger and 125 mg. a day to the older infants. In addition, all the infants were given a diet consisting of milk, egg yolk, a mixture of equal parts of pablum, wheat germ and a finely ground green oat grass rich in the vitamin B complex, percomorph liver oil, orange juice and in the cases of the older infants, liver. Nicotinic acid seemed to hasten the healing of the cutaneous lesions, but no evidence was found that it shortened the period of recovery from the disease.

ACRODYNIA TREATED WITH INTRAMUSCULAR INJECTIONS OF VITAMIN B_1. JAY I. DURAND, V. W. SPICKARD and ERNEST BURGESS, J. Pediat. **14**:74 (Jan.) 1939.

Two cases of acrodynia are described. Three days after treatment with intramuscular injections of vitamin B_1 was begun, marked improvement occurred. In both cases the improvement ceased and the symptoms grew worse when the injections were discontinued and the vitamin was given by mouth. In spite of the relapses which recurred when treatment by mouth was given, both patients recovered in six weeks from the beginning of injection treatment.

RAUH, Cincinnati. [AM. J. DIS. CHILD.]

SCLERODERMA IN BANDS AND PARATHYROIDECTOMY. W. NAESSENS, Maandschr. v. kindergeneesk. **8**:173 (Feb.) 1939.

Naessens gives a description of extensive and progressive scleroderma in bands in a girl of 11 years. Extirpation of a parathyroid gland resulted in amelioration, which lasted for about nine months. The author is of the opinion that the

sclerodermic syndrome does not have its cause wholly in the parathyroids. Parathyroidectomy may explain why the calcium has returned from the calcified skin to the decalcified skeleton.

A Case of Besnier-Boeck Disease. A. von Westrienen, Maandschr. v. kindergeneesk. **8**:262 (April) 1939.

A girl of 13 years presented Besnier-Boeck disease. There was swelling of all superficial groups of lymph nodes, and there were numerous subcutaneous small tumors, also knotty parotid glands and slight deviations in the cornea and in the capsule of the lens. A roentgenogram of the lungs showed the typical pseudomiliary picture, with severe enlargement of the lymph glands. The phalanges showed small deviations. Biopsy of a lymph node and of a subcutaneous tumor, which appeared to be situated in the muscular tissue, confirmed the diagnosis. The therapy consisted in administration of arsenic and rest in bed. The tumors and the lesions in the lungs soon disappeared. The results of tuberculin tests were negative, as they generally are in analogous cases.

Sclerema Adiposum Neonatorum. C. Goedhart, Maandschr. v. kindergeneesk. **8**:281 (April) 1939.

Goedhart describes histologic changes in the skin of a baby suffering from "sclerema adiposum." In the cutis and subcutis streptococci were abundant, especially in the lymph vessels. Many capillaries were distended and filled with blood. The greatest changes—among others, "necrosis"—were around the adipose tissue, so that the impression gained was that the streptococcic toxins had caused special changes in this tissue and in this way the hardness of the skin. On the right cheek the child showed an infection looking like a mosquito bite. The mother had latent syphilis with positive blood reactions. No signs of syphilis and no spirochetes were found in the child, not even in the organs. A second patient, a child, died within three days from streptococcic sepsis.

Congenital Cutaneous Defects Caused by a Form of Epidermolysis Bullosa. J. R. Prakken, Nederl. tijdschr. v. geneesk. **83**:2440 (May 27) 1939.

A child when born presented two blisters, which developed into slowly scarring cutaneous defects. Taking into consideration several other observations in the literature, Prakken states that this case supports the opinion that a number of congenital defects of skin may result from a form of epidermolysis bullosa congenita. How far this form is connected with the known varieties of epidermolysis bullosa hereditaria cannot yet be answered. The probability of epidermolysis congenita being in some cases the origin of congenital defects of skin was mentioned first by Carol and Heybroek, in 1925.

Treatment of Cutaneous Pruritus with Insulin. C. G. Vervloet, Nederl. tijdschr. v. geneesk. **83**:2728 (June 10) 1939.

Insulin has been shown to exert a great therapeutic influence in several forms of cutaneous pruritus. This probably depends on correction of the intracellular metabolism in the liver and in the kidneys. This medication is recommended for different types of itching of the skin.

van Creveld, Amsterdam, Netherlands. [Am. J. Dis. Child.]

Society Transactions

LOS ANGELES DERMATOLOGICAL SOCIETY

CHRIS R. HALLORAN, M.D., *Chairman*

SAUL S. ROBINSON, M.D., *Secretary*

Feb. 13, 1940

Chronic Roentgen Ray Dermatitis of the Hands, Arms and Legs, with Epithelioma. Presented by DR. C. RUSSELL ANDERSON.

Mrs. V. E., a housewife aged 53, had roentgen ray epilation of the hair on the legs and the forearms six years ago. Six to twelve months later she noticed that the treated skin was red. On April 1, 1938 she noted a small ulceration on the right forearm. This healed and recurred and spread almost over the length of the forearm.

A dermatologic examination on October 14 revealed pigmentation, atrophy, telangiectases, papillary elevations, scaling and keratotic lesions on the dorsal surfaces of the forearms and legs. On the right forearm was a crusted, ulcerated area, 12.5 cm. long and 1 to 4 cm. wide, with scleroderma-like induration. On Feb. 9, 1939 the patient returned with multiple crusted and ulcerated areas on the left forearm near the elbow. There were also multiple new keratoses on other involved regions. On November 13 the ulcerated area on the right forearm and the multiple keratoses were removed by the cautery. The microscopic examination showed chronic roentgen ray dermatitis, ulceration and early squamous cell epithelioma.

On Feb. 2, 1940 a biopsy specimen was taken from the papillary lesion just adjacent to the ulcerated area of the left forearm. The histologic examination showed hyperkeratosis, granulosis and thickening of the prickle cell layer. There were some areas of tinctorial change, with irregularity in size and shape of the cells, evidences of amitosis and cells with large, deep staining nuclei. The cutis showed fibrosis, homogenization of collagen, dilated vessels and absence of dermal appendages. The histologic diagnosis was chronic roentgen ray dermatitis, with early squamous cell epithelioma.

DISCUSSION

DR. L. F. X. WILHELM: I have not observed any cases of radiodermatitis in four or five years. In New York during the years 1925-1926 as many as 4 or 5 cases of roentgen ray dermatitis were presented at one meeting.

DR. CHARLES R. CASKEY: I should like to suggest a method of therapy. I have had a patient with a similar condition under observation and treatment for ten years. The hands, arms, legs and feet had extensive telangiectasia. The patient is a school teacher, and her hands were getting so bad that something had to be done. I used a light electrodesiccation spark and followed the telangiectases with a small spark. It is surprising to see how much benefit can be derived by this method of treatment. Some of the vessels will break and bleed, and an astringent is necessary. One should begin by treating the smaller telangiectases first. The electrodesiccation machines that give a black, charred spot are not satisfactory. One should have the current light enough to get a white desiccated area which closes up the telangiectases. My patient comes in the office for treatment only once or twice a year now. Two or three epitheliomas developed in some of the worst areas, and these have been treated with the cautery.

DR. C. RUSSELL ANDERSON: I thought the case would be interesting because of the extensive involvement. Cautery excision of the ulcerated areas is to be performed this week.

Sarcoid of Boeck with Uveitis and Keratitis. Presented by DR. C. RUSSELL ANDERSON.

Mrs. L. A. S., aged 64, was first seen on July 25, 1939. The history disclosed that in 1914 tuberculous glands were removed from the left side of the neck. In 1927 her eyes became "inflamed" and cleared after a cholecystectomy. In 1936 the ocular complaint recurred. Tuberculin tests performed in May 1936 gave strongly positive results and produced a flare-up of the ocular condition. A diagnosis of tuberculous keratitis was made. From 1936 until early in 1939 the patient received many subcutaneous injections of tuberculin. These injections occasionally produced an exacerbation of the ocular condition. During the latter part of February 1939 a red, slightly elevated plaque appeared on the upper lip, with obliteration of the normal lip markings.

The dermatologic examination on July 25 showed an oval, infiltrated, moderately elevated, reddish brown, slightly scaling plaque on the upper lip. The lesion was 4 by 2.5 cm. in size. It involved the philtrum, with obliteration of the normal markings, and the left side of the upper lip. The diascopic examination showed bilateral keratitis and argyrosis of the upper and lower lids. Examination of the ear, nose and throat revealed normal mucosa on the nasal septum and an extremely large left middle turbinate, interpreted as concha bullosa. Roentgenograms of the hands on August 24 revealed no cystic changes in the phalanges. The roentgenogram of the chest showed several small densities in the outer half of the right and left first and second interspaces, suggestive of old healed tuberculous processes. There were also some densities in the hilar processes. The blood and urine were normal. Flocculation tests for syphilis gave negative results. The histologic examination revealed round, oval and irregular masses of epithelioid cells in the cutis. An occasional Langhans giant cell was found. There was no caseation necrosis.

The treatment consisted of the administration of seventeen weekly injections of gold sodium thiosulfate. The doses varied from 20 to 50 mg. There was a rapid initial response in the cutaneous lesion. The sarcoid became smaller and less infiltrated, and there was a return of the normal contours of the philtrum. The ocular condition has also responded well to the gold therapy.

DISCUSSION

DR. WILLIAM H. GOECKERMAN: I have to take Dr. Anderson's word that the findings were as he said. I cannot see enough tonight to make a diagnosis of sarcoid, but the combination is a common one, and I readily accept the diagnosis.

DR. SAUL S. ROBINSON: I saw this patient before the gold therapy was given. The lesion clinically was sarcoid. I followed the case closely when Dr. Anderson was giving treatment, and there was a definite improvement each week.

DR. C. RUSSELL ANDERSON: There is little to see in the limited artificial light. However, in daylight there is still a brownish red color visible, and also a small amount of infiltration is palpable. The therapeutic result is good, but I feel it can be improved.

Senear-Usher Syndrome (Pemphigus Erythematodes; Chronic Benign Familial Pemphigus; Herpetiform Dermatitis Repens of Ayres and Anderson). Presented by DR. C. RUSSELL ANDERSON.

A. H. N., a man aged 32, states that about two months previously a scaling, moist, crusted, tender eruption associated with increased sweating appeared in the armpits. The right axilla was especially involved. Calamine lotion N. F. and a naftalan ointment were applied, without benefit.

The dermatologic examination showed many irregularly oval, crescentic, moist, scaling, crusted and vegetating patches in the right axilla. Ruptured bullae were present. In the borders of the scaling, crusted and vegetative patches were seen herpetiform lesions. The left axilla was similarly but less extensively involved. The presence of the bullae and the vegetating lesions suggested pemphigus vulgaris, but the herpetiform lesions supported the diagnosis as presented.

The therapy consisted of a drying paint containing 5 per cent coal tar solution. From Dec. 18, 1939 to Feb. 9, 1940 eight weekly superficial roentgen ray irradiations (75 r) were given to the lesions, together with weekly intravenous administrations of 1 Gm. calcium gluconate. Within eight days the lesions in the left axilla and the hyperhidrosis disappeared, leaving a reddish brown pigmentation. The vegetating lesions in the right axilla rapidly disappeared. The red, scaling, crusted, moist patches and herpetiform character remained, although they were greatly improved.

Recurrent Herpetiform Dermatitis Repens. Presented by DR. SAMUEL AYRES JR. and DR. JOHN D. ROGERS (by invitation).

C. R., a white man aged 31, has had a recurrent, pruritic, painful eruption on the head and neck for sixteen years. The lesions appear for one to six months of each year regardless of the season. The present eruption is located on the neck and is of one month's duration. The eruption starts as erythematous maculopapular lesions, which are followed by vesicles. There is no history of the ingestion of drugs.

The examination shows vesicular and bullous lesions on an erythematous base, 0.5 to 2 cm. in diameter, located especially on the dorsum of the neck. The borders are irregular, and the centers are raised. Crusts are present. The examination of the blood and urine gave negative results.

DISCUSSION

DR. SAMUEL AYRES JR.: Brief examination of the last 2 patients suggests that this disease resembles the one we reported on recently, especially the patient who presented lesions on the neck (ARCH. DERMAT. & SYPH. **40**:402 [Sept.] 1939). I do not wish to go on record without an opportunity of further examining this patient. The lesions on the neck were healed. They are frequently herpetiform in the beginning; then they spread out as a moist process. I have not the least idea as to the causation. It might be worth while to give nicotinic acid a trial. I think that in the case with the lesions in the axillas the condition is of too short duration to make a diagnosis. It may develop into a true dermatitis herpetiformis. The process in the second case, however, has been going on for sixteen years. I think this case is a typical one of the group of diseases as presented.

DR. C. RUSSELL ANDERSON: It is certain that this condition is not a new entity but only an old one which was never completely understood. At the present time eight or ten or probably more names have been given to this syndrome, as I mentioned in the presentation. The reason for the multiplicity of names is that different authors have described different clinical manifestations. The condition when limited to intertriginous areas has even been treated as chronic moniliasis by competent dermatologists. Now that almost every one is familiar with the syndrome and its protean clinical manifestations, its benignancy, its chronicity and its occasional familial occurrence, one name should be adopted for it. I believe that either Senear-Usher syndrome or Senear-Usher pemphigus should be adopted as the proper designation, because these authors first attempted to describe the syndrome (Senear, F. E., and Usher, B.: An Unusual Type of Pemphigus, ARCH. DERMAT. & SYPH. **13**:761 [June] 1926). The original article demands rereading and is especially recommended to any authors who are attempting to describe a new disease. As to treatment, superficial roentgen irradiation and intravenous injections of calcium salts have given me the best results.

DR. KENDAL FROST: Dr. C. Russell Anderson mentioned the use of calcium intravenously. I have used it in my case, and it seems to lessen the eruptive tendency of the lesions but is not, of course, curative.

DR. NELSON PAUL ANDERSON: I suggest that anybody who presents a case of what is believed to be benign familial pemphigus should present a biopsy slide. I believe that time will demonstrate that this disease has a characteristic histologic picture. Recently there have been three separate communications from widely separated parts of the country, all of which were describing the same entity (Pels, I. R., and Goodman, M. H.: ARCH. DERMAT. & SYPH. **39**:438 [March] 1939; Hailey, H., and Hailey, H., ibid. **39**:679 [April] 1939; Ayres, S., and Anderson, N. P.: ibid. **40**:402 [Sept.] 1939). Pels wrote on a peculiar type of Darier's disease with bullae, which is certainly the same sort of process as in Drs. Ayres and Rogers' case. Hailey and Hailey stated the belief that the condition is benign familial pemphigus because of its familial trait. I think they have a family group with 6 cases. The picture that Dr. C. R. Anderson's patient presents as one of the Senear-Usher syndrome or benign familial pemphigus might be either one of these conditions, but I do not believe that these two terms can be used synonymously.

DR. CHRIS R. HALLORAN: In the past year 3 or 4 patients with this dermatosis have been presented before this society. Hailey and Hailey (ARCH. DERMAT. & SYPH. **39**:679 [April] 1939) reported the first cases under the title "Familial Benign Chronic Pemphigus." Ayres and Anderson presented a report of 5 cases at the sixty-eighth annual meeting of the California Medical Association, Del Monte, Calif., on May 1, 1939, under the title "Recurrent Herpetiform Dermatitis Repens." In my opinion this form of pemphigus does not belong to those forms designated as the Senear-Usher syndrome. I also believe that clinically this entity can be definitely differentiated from other clinical forms. Apparently the condition in these cases represents a new benign form of pemphigus.

DR. SAMUEL AYRES JR.: I saw Dr. Frost's patient many years ago, and then I did not see any one with a similar condition until five or six years ago. It seemed to me that the condition in this case belongs in the same category. I do not believe it is the Senear-Usher syndrome, because the lesions occur on the neck and folds of the axillas and their appearance is not that usually seen in cases of Senear-Usher disease.

Naevus Flammeus. Presented by DR. CHARLES R. CASKEY.

D. B., a boy aged 3, has had a port wine mark on the right temporal region since birth. The mother has a similar type of birth mark. He is shown after treatment of the lesion with solid carbon dioxide.

DISCUSSION

DR. SAMUEL AYRES JR.: I think this cosmetic result is beautiful, as naevus flammeus is notoriously difficult to treat. When treatment is started in a small child, the results are apt to be better. I treated a little girl two years ago and did not succeed in getting rid of the nevus, but the father later said that the treatments started the child stuttering, due to "psychic trauma." The child had not talked before.

DR. CHARLES R. CASKEY: This patient has been under treatment since February 1938. The last treatment was given six weeks ago. He has had seventeen treatments. I should freeze the lesion with carbon dioxide and leave it alone for a month or six weeks and then refreeze it. I used an exposure of twelve to eighteen seconds with slight pressure and increased the time or pressure or both when necessary to cause sufficient sclerosis.

Basophilic Adenoma of the Pituitary. Presented by DR. NELSON PAUL ANDERSON.

H. A., a Negress aged 15, was first seen in the endocrine department of the Yale Street Clinic, where a diagnosis of thyroid and pituitary dysfunction was

made. The examination reveals obesity, particularly of the arms, the thighs and the trunk. There are striae distensae on the thighs, arms and lateral aspects of the trunk.

The laboratory examinations showed the blood and urine to be normal, the basal metabolic rate plus 2 per cent, water balance 6 per cent and sedimentation time 34 mm. per hour. The roentgenogram of the wrist showed the bones to be normal for the patient's age.

Perifolliculitis Capitis Abscedens et Suffodiens; Cutis Verticis Gyrata; Hydradenitis Suppurativa. Presented by DR. NELSON PAUL ANDERSON and DR. MILTON STOUT (by invitation).

P. N., a Negro aged 28, has had gyrations on the scalp all his life. Four years ago abscesses appeared over the occipital region. These abscesses were incised and drained and required six to eight weeks to heal. One year ago multiple small "abscesses" appeared throughout the scalp, particularly over the occiput. These lesions have been repeatedly incised and drained. Several months ago "boils" developed in the axillas, groin and perianal region. The patient was seen in the dermatologic service of the Los Angeles County Hospital on Jan. 25, 1940. At that time over the scalp there were multiple fluctuant areas, of which some were draining and some showed evidence of fibrosis. He was admitted to the hospital for examination and treatment.

The examination of the blood and urine gave normal results. The serologic and flocculation tests of the blood gave negative results. Cultures made from the scalp lesions showed a growth of pure Staphylococcus aureus.

The treatment consisted of the administration of sulfapyridine and nicotinic acid as follows: sulfapyridine, 15 grains (1 Gm.) every four hours for seven days, 17½ grains (1.13 Gm.) every four hours for nine days and 17½ grains (1.13 Gm.) every six hours for two days; nicotinic acid, 50 mg. twice daily. The total dose of sulfapyridine was 73 Gm. This maintained a blood level of 4.7 mg. per hundred cubic centimeters. Under this regimen the drainage ceased and the fluctuant areas became fibrosed, as seen now. The hydradenitis suppurativa subsided readily.

DISCUSSION

DR. WILLIAM H. GOECKERMAN: I fully agree with the diagnosis. I think it is interesting to find these three dermatologic phenomena in the same patient. I have long had a feeling that there is a close etiologic relation.

Keratosis Follicularis (Darier) with Remission and Exacerbation. Presented by DR. C. RUSSELL ANDERSON.

Miss A. M., aged 24, was first seen on Feb. 12, 1940, and the following history was obtained. In December 1938 a brownish, warty, furrowed patch appeared on the dorsum of the left hand between the thumb and index finger. Five months later the lesion disappeared spontaneously. In December 1939 the patch reappeared. No subjective symptoms were present. Multiple flat warts have been present on the right hand for two years.

On the dorsal surface of the hand, involving the first interdigital space and the web between the thumb and the index finger, is a brownish patch composed of aggregated papules and papillomatous lesions. There is furrowing at the sites of the normal cutaneous folds. The surface of the lesion is stippled with tiny, cayenne-pepper-like spots. Multiple flat warts are seen on the dorsal surface of the right hand and fingers.

The histologic examination showed relative and absolute hyperkeratosis, moderate granulosis and acanthosis. Dyskeratotic cells were numerous. Corps ronds and grains were found in all parts of the epidermis, from the basal layer to the granular layer. Space formation was absent.

DISCUSSION

DR. KENDAL FROST: The peculiar warty lesions were not removed for biopsy. I was surprised when I saw the histologic section. The histologic picture was not characteristic of the diagnosis as presented.

DR. C. RUSSELL ANDERSON: The biopsy specimen was taken late last night with next to the smallest size punch. Apparently some members of this society have had no experience with the extremely simple and satisfactory punch technic for removal of material for biopsy. The interesting thing about this case is the spontaneous remission of Darier's disease and its recurrence after a year.

Acanthosis Nigricans Associated with a Masculinizing Syndrome. Presented by DR. C. RUSSELL ANDERSON.

Miss F. M., a laundry presser aged 30, white, was first seen on Jan. 26, 1940. She stated that when she was 15 a heavy log fell across her abdomen and produced a grapefruit-sized red, painful swelling in the left loin. She was put in a body cast for four months, during which time universal hypertrichosis appeared. Since that time she has menstruated only five times, the last menses, on Dec. 15, 1939, requiring only two pads. For the past four years there has been a profuse, thick, yellow vaginal discharge every thirty days. The breasts failed to develop and became atrophic. On Oct. 13, 1937 the clitoris was amputated. On December 5 bilateral exploratory operation was performed, in a search for adrenal tumors; none were found. After the operation frontal and temporal alopecia appeared. On March 8, 1939 a laparotomy was performed to explore the pelvis. Small masses of ovarian tissue and a small uterus were found. No ovarian tumors were present. During the past six months extreme fatigue, weakness in the arms and hands and an aching pain between the shoulders have been present. These symptoms have been increasing from week to week.

The examination reveals the body conformation to be entirely masculine. The patient is well developed, lean and heavily muscled. There are universal hypertrichosis, a heavy beard and a male type of frontal and temporal alopecia. The breasts are small and undeveloped. A few white striae are present on the anterior aspect of the thighs. Obesity, lividity and acneform lesions are present. The anterior axillary folds are the sites of hyperpigmentation, papillary hypertrophy and parallel rugae in the sites of the normal cutaneous folds. (The presence of these lesions was unknown to the patient until attention was called to them.)

The blood pressure is 122 systolic and 80 diastolic; the pulse is 88 per minute. Glycosuria is absent.

The histologic examination of an axillary fold lesion showed typical features of acanthosis nigricans. There were relative and absolute hyperkeratosis, with the epidermis thrown up into folds, acanthosis, with decided prolongation of the rete pegs, and increased pigmentation of the basal cell layer.

DISCUSSION

DR. C. RUSSELL ANDERSON: I thought the case interesting because of the associated acanthosis nigricans. Because of the absence of adrenal or ovarian tumors, I have made a tentative diagnosis of a tumor of an adrenal rest, possibly in the region of the celiac plexus.

Argyria. Presented by DR. SAMUEL AYRES JR.

O. H., a girl aged 5 years, was burned with hot coffee two years ago. She was treated immediately with 5 per cent tannic acid and 10 per cent silver nitrate. After the eschar separated, a pronounced argyria was present. The mother noted that the areas exposed to the sunlight improved in comparison with covered areas and had the patient wear a sun suit. The pigmentation has gradually disappeared.

DISCUSSION

DR. SAMUEL AYRES JR.: I had not seen the patient for two years until the day before yesterday, when the mother told me that she had discovered that while the child was wearing shorts in the summer the areas exposed to the sunlight were paler than the covered parts. Taking that for a clue, she exposed all the affected areas to the sunlight, with the result seen tonight. It was contrary to what one would have expected. One would have thought the pigment would increase rather than decrease. I should say that the color had faded 80 to 90 per cent, with no other treatment than exposure to the sun. Whether the pigment would have faded anyway, I do not know.

CHRIS R. HALLORAN, M.D., *Chairman*

SAUL S. ROBINSON, M.D., *Secretary*

March 12, 1940

A Case for Diagnosis (Tuberculosis Cutis? Lupoid Sycosis?). Presented by DR. JULIUS R. SCHOLTZ.

J. B., a white man aged 57, has had "lung trouble" and "asthma" for many years. He was first seen in September 1938 because of a palm-sized lesion on the left temporal and parietal region. The eruption consisted of an erythematous plaque, with many follicular pustules, scarring and alopecia in the involved area. The scar was atrophic and telangiectatic. The condition was considered to be a mycotic or bacterial infection, but organisms have never been found on microscopic examination or by culture. Treatment consisted of the local application of iodine, thymol, anthralin (dihydroxyanthranol) and mercurials, but there was no response to therapy. The course of the eruption has been fluctuating, showing sometimes involution and sometimes exacerbation, with the appearance of a new crop of pustules overnight. The subjective symptoms consist of some pain and itching. There have never been constitutional symptoms or associated lymphadenopathy. There is no history of the administration of medicaments.

The serologic tests for syphilis gave negative results. Histologic examination showed a dense round cell infiltration in the cutis. The infiltrate was arranged in fairly well circumscribed masses about the blood vessels and cutaneous appendages. The cells consisted entirely of small and large lymphocytes and epithelioid cells. There was one small circumscribed group of epithelioid cells, small lymphocytes and fibroblasts that resembled a fairly well developed tubercle.

DISCUSSION

DR. E. D. LOVEJOY: The picture suggests sycosis, but there is not much scarring. I am in favor of the original diagnosis.

DR. BEN NEWMAN (by invitation): The principal feature of this eruption is pustular folliculitis involving the outer border of the left temporal region of the scalp, with resulting cicatrizing alopecia. I consider this case a classic example of lupoid sycosis.

DR. C. RUSSELL ANDERSON: I agree with the diagnosis of lupoid sycosis, or, as it is sometimes called, folliculitis sycosiformis atrophicans capillitii.

DR. H. C. L. LINDSAY: I consider the eruption to be follicular, not tuberculous. The area is too extensive and too pustular, considering the age of the lesion. There is a tendency for lupus to avoid pus formation.

DR. JULIUS R. SCHOLTZ: I was not particularly convinced of the correctness of the diagnosis under which I presented the case. I had always considered the case to be one of bacterial folliculitis or sycosis, and was surprised to find that

the pustules were sterile on repeated examinations. The diagnosis of tuberculosis was suggested by the biopsy report, but clinically this diagnosis can hardly be considered. It is, nevertheless, interesting that the section shows almost a pure lymphocytic infiltrate. In a pyogenic disease, such as lupoid sycosis, one would expect to find the usual evidences of pyogenic inflammation.

DR. SAMUEL AYRES JR.: I believe that the folliculitis is due to a focus of infection, either tuberculous or streptococcic. The condition is possibly a variant of lupus erythematosus. I have observed cases that present features of both lupus erythematosus and sycosis vulgaris.

DR. A. FLETCHER HALL JR.: I consider the case to be one of ulerythema sycosiforme.

DR. NELSON PAUL ANDERSON: My diagnosis is typical lupoid sycosis.

Myelogenous Leukaemia Cutis. Presented by DR. JULIUS R. SCHOLTZ.

Mr. B. B., aged 56, states that he had an "itching eruption" twenty years ago that responded to roentgen irradiation. He does not know whether a definite diagnosis was made at that time. The present pruritic eruption began eighteen months ago and involves the tip of the nose and the trunk. The lesions have fluctuated somewhat but have never entirely cleared.

The dermatologic examination shows a weeping, crusted eruption involving the nose, the anterior part of the trunk and the left axilla. The primary lesion is an indurated dusky red papule. The papules coalesce and form large, poorly defined patches. The general appearance is that of an infectious eczematoid dermatitis, but hemorrhagic and indurated lesions are present. Splenomegaly and enlarged mediastinal nodes are found on examination. Laboratory examination showed the granular leukocyte count to be as high as 70,000 per cubic millimeter, with reductions after high voltage roentgen irradiation to the spleen. The histologic examination showed grouped and scattered, large, lightly staining leukocytes with poorly defined nuclei in the upper part of the cutis. The leukocytic cells were situated in and about the blood vessels and between the bundles of connective tissue. Some of these cells were three times the size of a polymorphonuclear leukocyte and were probably myeloblasts.

The therapy has consisted of the administration of six fractional doses (60 r) of superficial roentgen rays to the involved cutaneous areas. Some involution of the lesions resulted from this therapy. The patient is also receiving deep roentgen irradiation to the spleen.

DISCUSSION

DR. WILLIAM GOECKERMAN: The lesions are not typical of true leukemia cutis but are probably leukemids.

DR. WALTER SCHWARTZ (by invitation): There is no question of the diagnosis of myelogenous leukemia, but I hesitate to consider the cutaneous lesions as being due to it, because specific cutaneous infiltrations in myelogenous leukemia are extremely rare. I believe that there are only 17 or 18 such cases reported. The patient may be suffering from pruritus, as is seen in most cases of Hodgkin's disease, and the lesions on his skin may be secondary to scratching.

DR. JULIUS R. SCHOLTZ: I have not seen this patient for three weeks, and the picture has changed considerably. When first examined, he presented a weeping, crusted dermatitis involving the nose, the left axilla and the left side of the abdomen, with many scattered crusted papules on the neck and the extremities. The picture looked like an infectious eczematoid dermatitis, but the papules were unusually "shotty." He received superficial roentgen irradiation to the cutaneous areas and high voltage roentgen therapy to the spleen and the lymph glands. It is of interest that the cutaneous lesions showed considerable improvement while the high voltage therapy was being given, during the period before treatment of the skin was begun. The histologic section showed infiltration with cells characteristic of the disease.

Localized Scleroderma. Presented by DR. JULIUS R. SCHOLTZ.

J. H., a white man aged 21, has had a thickened area on the abdomen for several years. There is a past history of a severe streptococcic infection of the throat at the age of 6 years. Three months ago he had an infection of the sinuses, necessitating a radical operation on the antrum. After surgical intervention the lesion increased in size.

In the right upper abdominal region, near the umbilicus, is a palm-sized, oval lesion with a white sclerotic central zone, a narrow brown middle zone and an erythematous purple outer area. The central area shows two hard, indurated spots at each end, the shape of a dumb-bell.

The basal metabolic rate was —6 per cent. The histologic examination showed a thin epidermis with considerable pigment in the basal layer. The upper part of the cutis contained slight perivascular round cell infiltration. The collagen throughout the upper half of the cutis was swollen and blurred. There were homogenization and fragmentation of the collagen bundles.

The treatment has consisted of the daily administration of thyroid, ½ grain (0.03 Gm.), and daily olive oil massage of the lesion.

DISCUSSION

DR. SAMUEL AYRES JR.: I have seen several patients with morphea benefited by treatment with water-cooled ultraviolet irradiation applied with pressure for several minutes to the point of obtaining a blistering reaction. It is true that lesions of scleroderma may heal spontaneously, but I believe that water-cooled ultraviolet radiation with pressure is of benefit.

DR. ANKER K. JENSEN (by invitation): I have had under my care at the dermatologic clinic of the White Memorial Hospital a patient with two areas of localized scleroderma. These two areas have received the same amount of treatment, acetylbetamethylcholine hydrochloride (mecholyl) iontophoresis. One of these lesions is now soft and pliable, with no sign of induration; the other has not shown much improvement. This treatment has been given twice a week for three months. I wonder if any of the members of the society have used "aciform" (a compound of formic acid, 95 per cent alcohol, iodine crystals, sulfur, terpene and distilled water). Dr. Laurence H. Mayers has reported (*Indust. Med.* **8**:443 [Nov.] 1939) some interesting results with it in the treatment of scleroderma.

Rosacea-Like Tuberculid. Presented by DR. PAUL D. FOSTER.

Mrs. J. K. M., a housewife aged 46, complains of an eruption on the face, of one year's duration. The lesion first appeared on the cheeks and gradually spread to involve the forehead and the neck. The dermatologic examination shows a fine erythematous papular eruption on the face, especially on the central regions, associated with flushing.

The examination of the blood showed 87 per cent hemoglobin, 4,400,000 erythrocytes per cubic millimeter and a color index of 0.97, with 66 per cent leukocytes, 30 per cent lymphocytes, 2 per cent monocytes and 2 per cent eosinophils. The Kline test gave a negative action.

DISCUSSION

DR. STANLEY CHAMBERS: Although the cutaneous picture in this case is not that of the accepted rosacea-like tuberculid, it does represent the atypical types which have been occasionally described.

DR. WILLIAM GOECKERMAN: I cannot see anything on which to base such a diagnosis.

DR. SAMUEL AYRES JR.: My diagnosis is rosacea, probably of the gastrointestinal type. Was a tuberculin test performed?

DR. MAX J. WOLFF: My diagnosis is rosacea or lupus erythematosus.

DR. JULIUS R. SCHOLTZ: Although my conception of the clinical picture in this disease may be erroneous, I have made the diagnosis of a Lewandowsky tuberculid

in 2 cases in which the clinical picture was exactly the same. They correspond to the case reported by Dr. Saul S. Robinson (*Urol. & Cutan. Rev.* **41**:34, 1937). I agree with the diagnosis as presented. I was able to detect pinpoint brownish puncta on the forehead of this patient under diascopic pressure.

DR. SAUL S. ROBINSON: I consider the condition to be a rosacea-like tuberculid. Small brownish red papules, superimposed on an erythematous base, are scattered over the face. I suggest that if the disease does not respond to the treatment for ordinary rosacea the patient be given gold sodium thiosulfate, especially, if the tuberculin test gives a positive result.

DR. PAUL D. FOSTER: The reaction to a tuberculin test was slightly positive.

Lupus Erythematosus Involving the Tongue. Presented by DR. C. RUSSELL ANDERSON.

Mrs. H. D., aged 40, was first seen in November 1938, because of painful erosion of the mouth and tongue of one year's duration and a facial eruption of one month's duration. Examination at that time showed leukoplakia-like striae and plaques on the dorsal surface of the tongue, with a superficial erosion on the right distal portion of the tongue. There was a similar erosion on the buccal mucosa of the right cheek. Retiform, white lesions resembling lichen planus were seen along the interdental line opposite the molar teeth. On the cheeks, the bridge of the nose and the midforehead were edematous red plaquelike lesions associated with mild scaling and follicular plugging. The cutaneous lesions were transitional between the chronic discoid and the subacute disseminated type of lupus erythematosus.

The dermatologic examination today shows two irregular superficial erosions on the sides of the tongue, with atrophy of the tip and the sides of the tongue. The leukoplakic appearance has largely disappeared. Serologic reactions were negative in November and December 1938 and in February 1939. The treatment has consisted of the administration of eleven intravenous injections of gold sodium thiosulfate from Nov. 10, 1938 to Jan. 18, 1939. This therapy resulted in the disappearance of the facial lesions, but no improvement of the stomatitis or glossitis was noted. On January 28 the buccal lesions were found to have become worse, and there was a slight recurrence of the facial lesions. The patient received azosulfamide (neoprontosil; disodium 4-sulfamidophenyl-2′-azo-7′-acetylamino-1′-hydroxynaphthalene-3′,6′-disulfonate), 10 grains (0.65 Gm.), four times a day. On the following day there was an acute flare-up of the facial lesion, with a universal lichenoid pruritic eruption. From January 29 to March 17 the patient received ten intravenous administrations of calcium gluconate, 10 cc. of a 10 per cent solution, and ten intramuscular injections of 100 mg. of bismuth subsalicylate. The cutaneous lesions entirely cleared, but the lesions of the mouth and the tongue showed no improvement.

DISCUSSION

DR. A. FLETCHER HALL JR.: I could not make a diagnosis of lupus erythematosus from the appearance of the tongue. The histologic section looks so much like some of the color slides that Dr. C. P. Rhodes showed in Philadelphia in November 1939, at the meeting of the American Academy of Dermatology and Syphilology, that I suggest treatment with vitamin B.

DR. WILLIAM GOECKERMAN: The condition does not now resemble lupus erythematosus of the tongue. It is puzzling that lesions as extensive as those in this case should disappear without atrophy.

DR. SAUL S. ROBINSON: I saw this patient in Dr. Anderson's office at the time that the cutaneous lesions of lupus erythematosus were definite, and I agree with the diagnosis as presented.

DR. CHRIS HALLORAN: I do not believe that the lesions of the tongue are lupus erythematosus. I have never seen lesions of lupus erythematosus occurring in the buccal cavity, though it is not uncommon to see such lesions on the mucous

membranes of the lips. The lesions on the tongue in this case impressed me as transitory benign plaques.

A Case for Diagnosis (Pemphigus of the Eye? Fixed Eruption?). Presented by DR. SAMUEL AYRES JR.

Miss P. B., aged 19, states that her left eye became "inflamed" about three and one-half years ago and has never entirely cleared. The right eye has never been affected. Cutaneous lesions in the right axilla and on the thighs have been present for about one and one-half years. The patient believes that the ocular and the cutaneous lesions have synchronous periods of slight remission and exacerbation. On several occasions during the past few months, the patient has taken sulfanilamide for as long as ten days, with some improvement. She has also taken ex-lax in the past, but she denies the taking of any medicament containing phenolphthalein for the past six years. There is no history of the presence of any foci of infection.

The left eye shows severe inflammation, with redness that extends onto the face, considerable lacrimation and photophobia. The conjunctiva is somewhat opaque, apparently owing to organization of the inflammatory process. The right axilla and the medial aspect of each thigh present sharply defined, irregular, oval to circular, thickened violaceous plaques. Microscopic examination of the cutaneous lesions for fungi on two occasions has given negative results.

DISCUSSION

DR. BEN NEWMAN (by invitation): Ocular pemphigus presents shrinking of the eyeball and folding of the conjunctiva. These phenomena are not present here, and the condition is therefore not pemphigus.

DR. CHRIS HALLORAN: I have under my care a patient with pemphigus vulgaris in whom the conjunctiva of one eye became temporarily involved. There was no resultant shrinking of the eyeball during or following the conjunctival involvement.

DR. SAMUEL AYRES JR.: No definite diagnosis has been made. The process is limited to the epithelial structure of the eye, according to the oculists. In the only case of ocular pemphigus which I have observed blebs were present on the conjunctiva. In this case I thought of a fixed eruption because of the lesions over the body.

DR. WILLIAM GOECKERMAN: I have observed ocular pemphigus at the Mayo Clinic. In none of the cases did true cutaneous pemphigus develop during years of observation. I do not consider ocular pemphigus the same as true pemphigus, although bullae are not uncommonly seen on the conjunctiva.

Oil Acne. Presented by DR. SAMUEL AYRES JR.

O. B. B., a white man aged 24, has an extensive eruption that first appeared four or five months ago, while he was working in a plant which manufactures plumbing supplies. The patient was in constant contact with "cutting oil," which saturated his arms and shirt, especially the sides of the trunk. The eruption gradually increased in severity, and the patient stopped work about nineteen days ago. There is no history of acne during adolescence.

There is an extensive eruption, most severe on the arms and the sides of the trunk, but involving also the axillas, chest, abdomen and thighs. The affected areas are studded with large comedos and show numerous papules, pustules and deep, fluctuant, abscess-like lesions. The upper part of the back and the face are entirely free of lesions, except for a few comedos on the face.

DISCUSSION

DR. SAMUEL AYRES JR.: I have begun treatment with fractional doses of superficial roentgen radiation. I have had no experience in treating oil acne with roentgen radiation, and I am wondering what type of response to expect.

DR. WILLIAM GOECKERMAN: This is typical oil acne. I observed a simliar case in which a patch test with abrasive material to which the patient was exposed gave a positive reaction.

DR. H. C. L. LINDSAY: One should consider the occupational character of this disease and its relation to compensation.

DR. SAMUEL AYRES JR.: I consider this case to be one in which compensation should be made.

CHRIS R. HALLORAN, M.D., *Chairman*

SAUL S. ROBINSON, M.D., *Secretary*

April 9, 1940

Norwegian Scabies. Presented by DR. NELSON PAUL ANDERSON and DR. MILTON STOUT (by invitation).

D. B., a boy aged 13, has a history of having had "eczema" for variable lengths of time during infancy. About five years ago, "eczema" developed on the hands and soon spread to involve the trunk, legs, feet, head and neck. The patient has been in a number of hospitals for several weeks at a time and has attended many clinics, but no diagnosis of his eruption was made. There is a history of "skin trouble" in the mother and the grandmother. The patient was admitted to the Los Angeles County Hospital on March 13, 1940. He presents a generalized, scaling, moderately erythematous dermatitis. The soles, and the palms to a lesser degree, are covered with thick, greasy, gray crusts. The toe nails and finger nails are thickened and ridged. Several digits show paronychia. The patient is subnormal physically and mentally. The right testicle is undescended.

Examination of the blood showed 85 per cent hemoglobin, 4,730,000 erythrocytes and 16,350 leukocytes, per cubic millimeter, 61.5 per cent polymorphonuclear neutrophils, 13 per cent lymphocytes, 4 per cent monocytes, 20.5 per cent eosinophils and 1 per cent basophils. The urine was normal. A roentgenogram of the chest showed slight prominence of the right hilar shadows, but the picture was not distinctive of tuberculosis. The histologic examination showed an irregular acanthotic epidermis, with moderate perivascular reaction in the upper part of the cutis. The histologic picture was somewhat psoriasiform, but was not that of true psoriasis.

DISCUSSION

DR. WILLIAM GOECKERMAN: I think the condition is ichthyosiform erythroderma.

DR. NELSON PAUL ANDERSON: I am sorry that there is no more discussion on this case. The condition is not pityriasis rubra pilaris. This is the first time in forty-two years that a case of this kind has been reported in this country. It is a typical case of Norwegian scabies. The condition was considered to be psoriasis, arsenical dermatitis or seborrheic dermatitis. The skin is loaded with scabies organisms. When certain changes took place recently, I took scrapings from one of the elbows, which revealed at least 20 acari of scabies. The changes in the nails are characteristic. The general erythematous dermatitis and the thickening of the palms and soles are also characteristic of this type of scabies. The organism is of the same type as that found in ordinary scabies. The first case, which occurred in a leper, was reported by Boeck (cited by Ormsby, O. S.: A Practical Treatise on Diseases of the Skin, ed. 5, Philadelphia, Lea & Febiger, 1937). For a time it was thought to be one of scabies of a type found only in lepers. The diagnosis in this case is correct, in my opinion. Therapy should be approached cautiously, as the patient will not tolerate vigorous treatment for scabies. This is the third

case to be reported in this country; the second case was reported in 1898. None of the authors of American textbooks claim to have seen a condition like it. It is transmitted actively, not passively. The man in the next bed is itching, and some of the nurses are complaining of the same trouble.

DR. SAUL S. ROBINSON: I thought Norwegian scabies presented thick crusted lesions over the entire body.

DR. NELSON PAUL ANDERSON: The patient had thick crusts when he came in. Another physician called the disease pityriasis rubra pilaris.

DR. H. C. L. LINDSAY: I think the patient has ichthyosis scabies superimposed on ichthyosis. I have seen many patients who were supposed to have Norwegian scabies, but the diagnosis could not be proved.

DR. KENDAL FROST: Dr. Anderson certainly deserves a word of compliment for making a brilliant diagnosis in a condition which few, if any, have ever seen.

DR. WILLIAM GOECKERMAN: I should like further proof.

DR. CHRIS HALLORAN: I request that the patient be presented again at the next meeting.

NOTE.—The patient was presented again one month later. The cutaneous lesions were greatly improved after treatment for scabies.

Primary Cutaneous Hodgkin's Disease. Presented by DR. H. C. L. LINDSAY and DR. WALTER F. SCHWARTZ (by invitation).

Mrs. E. E. L., a Norwegian aged 66, has had facial paralysis and some numbness of the toes of the right foot for the past four years. For the past twelve years, she also has suffered from diabetes mellitus, which has been controlled for two years by protamine zinc insulin. About three and a half years ago a more or less generalized pruritic eruption developed, which has persisted and grown worse. The lesions begin as "little pustules" on an erythematous base and soon develop into firm nodules. There is no history of the ingestion of iodides or bromides. The generalized eruption is most prominent on the extensor surface of the hands, the forearms and the arms, as well as on the lateral aspects of the arms. The upper parts of the back, the chest, the buttocks and the thighs are also extensively affected. The eruption consists chiefly of excoriated, firm nodules and large papules. There are some lichenification and increased pigmentation in the parts chiefly affected. A few vesiculopustules are found in the center of bright erythematous patches, some of which measure nearly 1 cm. in diameter. These vesiculopustules represent early lesions. There is lymphadenopathy in the axillary and inguinal areas, some of the nodes being nearly 3 cm. in diameter. The spleen is barely palpable. The blood pressure is 180 systolic and 100 diastolic.

Examination of the blood showed 9,200 leukocytes per cubic millimeter; 70 per cent polymorphonuclear leukocytes, of which 16 per cent were stab cells and 54 per cent were segmented; 7 per cent monocytes; 5 per cent eosinophils, and 18 per cent lymphocytes. The urine showed no sugar.

Two specimens of tissue were taken for histologic study. The first area showed acute suppurative inflammation. In the other section there was no suppuration, but the cutis showed moderate edema, with perivascular inflammatory cell infiltration, including chiefly round cells, some plasma cells, occasional eosinophils and swollen fibroblasts and histiocytes. These cells were present about most of the blood vessels, down into the subcutaneous tissue. Occasionally between the nests of tumor tissue portions of the cutis showed swollen fibroblasts and a few eosinophils and round cells.

The treatment consisted of seven exposures of 80 r each to twenty-five fields.

DISCUSSION

DR. IRVING R. BANCROFT: This case is not like the one at the Los Angeles County Hospital. It has different physical aspects.

DR. SAMUEL AYRES JR.: I consider the condition to be prurigo. To say that it is primary Hodgkin's disease means that there was no enlargement of the

lymph glands elsewhere, as in the mediastinum. The fact that the condition was present for two years without other involvement is against the diagnosis of Hodgkin's disease.

DR. JULIUS SCHOLTZ: This case impresses me as one of dermatitis herpetiformis. The lesions appeared in groups, and the location is fairly typical. Disappearing lesions have left pigmentation and atrophic scars. One would expect to find other signs of Hodgkin's disease in a condition of this duration. The histologic picture in this case is not definite enough to serve alone as the basis of the diagnosis.

DR. WILLIAM GOECKERMAN: I could see only excoriations due to the scratching. In a case of Hodgkin's disease the patient should have symptoms other than those of the skin. I saw nothing that would justify a diagnosis of dermatitis herpetiformis, and I do not think the microscopic picture warrants a diagnosis of Hodgkin's disease.

DR. WALTER F. SCHWARTZ (by invitation): I am not proud of my diagnosis. I saw a patient with a condition like this at a dermatologic meeting in Cleveland in 1938, and the diagnosis was Hodgkin's disease. The patient had had the cutaneous lesions fifteen years. Older lesions seemed nodular, some of which were closely grouped together. When I first saw this patient, she had many vesicles on an erythematous base. Eight biopsies were performed before the pathologic picture confirmed the diagnosis. I agree that it is not inconsistent with the findings in Hodgkin's disease. I am not sure of the diagnosis.

DR. SAMUEL AYRES JR.: What objection is there to the diagnosis of prurigo?

DR. NELSON PAUL ANDERSON: I believe that this case is one of Hodgkin's disease of the skin. One of the sections can well be characterized as typical. I think Dr. Schwartz is correct in his diagnosis.

DR. L. F. X. WILHELM: I should like to see the patient again in six or eight months.

DR. H. C. L. LINDSAY: I thought at first that the disease was dermatitis herpetiformis, but not after I had seen the microscopic section. I have never encountered a case of prurigo in which there were so many lesions.

DR. WALTER SCHWARTZ (by invitation): I did consider the diagnosis of prurigo, but the onset was too late in life for this condition.

Naevus Linearis of the Arm; Lichen Acuminatus of the Legs. Presented by DR. IRVING R. BANCROFT.

E. H., a white man aged 50, complains of lesions on the right thumb, the little finger and the palm, which have been present since infancy. About thirty years ago a linear lesion appeared on the left arm. In 1915 similar lesions developed on the leg.

Dermatologic examination shows a patch of grouped papules on the left side of the chest. A linear papular eruption occurs on the left side of the chest and on the left arm. On the left leg are nodular lesions.

DISCUSSION

DR. A. FLETCHER HALL JR.: I thought the condition was linear lichen planus hypertrophicus.

DR. THOMAS W. NISBET, Pasadena, Calif.: I agree with the diagnosis as presented.

DR. KENDAL FROST: I agree with the diagnosis of nevus, although the condition could be linear hypertrophic lichen planus.

DR. FRANKLIN I. BALL: What is Dr. Bancroft's diagnosis? I agree that the condition is linear lichen planus of the hypertrophic type.

DR. L. F. X. WILHELM: I agree with the diagnosis. I think a biopsy should be done.

DR. IRVING R. BANCROFT: The peculiarity of this lesion is that it appeared not at birth, but at the age of 6 or 7 years. The lesions on the leg appeared at the age of 25. All the lesions were pruritic, particularly those on the leg.

A Case for Diagnosis (Psoriasis? Eczema? Palmar Syphilid?). Presented by DR. CLEMENT E. COUNTER (by invitation), Long Beach, Calif.

E. S., a Portuguese aged 44, has had an eruption on the palms for two years. The condition has become worse during the past four months. On the palms and palmar surfaces of the fingers are dry, scaling lesions. There are thickened areas on the knees and scaling patches on the scalp. The serologic reaction of the blood has been strongly positive on two occasions during the past two weeks. Microscopic examination of the scales for fungi gave negative results. The urine was normal. Treatment has consisted of one intramuscular injection of nonspecific protein and two fractional doses of roentgen radiation (75 r). No change has been noticed in the lesions as a result of this therapy.

DISCUSSION

DR. A. FLETCHER HALL JR.: I thought this lesion was a late syphilid.

DR. BEN A. NEWMAN (by invitation): I agree with the diagnosis of syphilid.

DR. SAMUEL AYRES JR.: I agree with the diagnosis of palmar syphilid.

DR. CLEMENT COUNTER (by invitation), Long Beach, Calif.: This lesion is interesting because it is bilateral and does not have a rolled edge to give it the appearance of a syphilid. The history is misleading, because the area becomes much worse after manual labor. I think the lesion will disappear with antisyphilitic treatment, but I believe that it is psoriasis.

DR. STANLEY C. ANDERSON: Because of the associated papular scaling lesions on the knees, elbows and scalp, I thought the condition was psoriasis of the palms.

DR. NELSON PAUL ANDERSON: I agree with Dr. Anderson.

DR. SAMUEL AYRES JR.: An interesting lesion on the man's wrist had the circinate appearance of syphilis. There is a possibility that the man has two diseases.

DR. CHRIS HALLORAN: I think this case should be presented again, for the results of pathologic examination are not yet available.

Scleroderma Treated with Mecholyl Iontophoresis. Presented by DR. ANKER K. JENSEN (by invitation).

V. C., aged 15, was first examined on May 2, 1939. She complained of two lesions, one over the epigastrium and the other on the right breast, of two weeks' duration. No subjective symptoms were associated with the eruption. Examination now reveals two indurated oval areas, one on the right breast and the other beneath the breast. The lesions have a pearly white, shiny center and a scarlet border. The examination of the blood showed it to be normal. The basal metabolic rate was +1 per cent. The urine was normal. Histologic examination showed dense collagenous bundles in the cutis, with chronic inflammatory infiltration about the sweat glands and the blood vessels. Sixty-two treatments with mecholyl iontophoresis were given over forty-two weeks. The results have been satisfactory.

DISCUSSION

DR. WILLIAM GOECKERMAN: I think the condition is scleroderma. To be a typical picture of scleroderma it should have had a more violaceous border. This has probably been altered by the treatment.

DR. JOHN D. ROGERS (by invitation): I saw this patient before she had had any treatment. The lesion had an ivory appearance. There has been decided improvement since treatment.

DR. THOMAS W. NISBET, Pasadena, Calif.: I agree with the diagnosis.

Keloid and Depressed Scars Subsequent to Ecthymatous Rupioid Syphilids. Presented by DR. IRVING R. BANCROFT and DR. O. M. STOUT (by invitation).

P. E., a woman aged 23, stated that she had had "chickenpox" in January 1939. The pustular lesions failed to heal, however, and new lesions continued to develop. For four months the lesions were treated locally several times a week. Each treatment consisted of the removal of thick, rupioid crusts and the swabbing of the base of each lesion with hydrogen peroxide. On April 22 the patient was admitted to the Los Angeles County Hospital. She weighed 80 pounds (36 Kg.), and her general condition was poor. She presented generalized, fairly discrete, pustular, ecthymatous and rupial lesions, showing some scarring and evidence of healing. There were two necrotic ulcers on the soft palate and pharynx. The scalp was scarred and crusted. The serologic reaction of the blood was positive. The patient received antisyphilitic therapy consisting of bismo-cymol, potassium iodide and neoarsphenamine. The response to treatment was good, but many keloids and depressed scars followed the disappearance of the rupial lesions.

DISCUSSION

DR. JULIUS R. SCHOLTZ: When this girl was in the ward, she showed widespread, heavily crusted, ulcerated lesions, a so-called malignant secondary syphilid, with extreme toxicity, high fever and prostration. She had lost more than 20 pounds (9 Kg.) in weight. Her response to treatment was prompt, and the scars became hypertrophic almost immediately. It is interesting to observe that some of the scars are at present thin and atrophic, while others show heavy keloids. I had another case similar to this; that of a young woman in whom secondary syphilis appeared five days after delivery. The course of the condition and the cutaneous lesions were practically identical with those of this patient.

DR. BEN A. NEWMAN: When the patient left the hospital all the scars were keloidal.

DR. SAMUEL AYRES JR.: This case is particularly interesting because of the fact that some of the keloids are linear. My first impression was that the disease was dermatitis factitia. I do not think, however, that there is any question as to the diagnosis now.

Pyoderma Faciale (O'Leary). Presented by DR. THOMAS W. NISBET, Pasadena, Calif.

R. W. S., a student aged 17, has a pustular eruption involving the face, of six months' duration. In November 1939 the lesions became rapidly worse and resulted in swelling and undermining by fluctuating abscesses. The patient suffered from general malaise, fever and loss of weight. Treatment consisted of the weekly administration of roentgen radiation (100 r), filtered through 0.5 mm. of aluminum, for three weeks and the local application of Danish ointment (an alkaline sulfur ointment). After each treatment there was an exacerbation of the eruption, with rupture of some of the abscesses. Shortly after the last treatment the condition began to subside rapidly, leaving deep keloidal scars.

DISCUSSION

DR. WILLIAM GOECKERMAN: I think this case is one of deep-seated acne.

DR. WALTER F. SCHWARTZ (by invitation): This is a new diagnostic term as far as I am concerned. I have been calling conditions like this acne conglobata.

DR. STANLEY C. ANDERSON: I call the condition severe pustular acne with keloids.

DR. SAMUEL AYRES JR.: I agree with Dr. Anderson.

DR. KENDAL FROST: I call the condition keloid developing in scars of acne conglobata.

DR. THOMAS W. NISBET, Pasadena, Calif.: This is the most acute acne I have ever seen. The disease ran its course in one month. I have never seen such swelling in a case of acne. It is just like the pyoderma faciale described by Dr. O'Leary.

Onychomycosis Treated with Vaccine. Presented by DR. HARRY P. JACOBSON.

Mr. F. S., aged 29, has had a fungous infection of the nails for seven years. He believes that he contracted the infection from his wife, whose toe nails appeared to him to look like his own nails at the time of the first examination. A variety of topical applications and a series of roentgen radiations administered during the past seven years afforded him no permanent relief. At the time of the first examination the nails of all the toes, the left thumb and the index fingers were creamy yellow, disfigured and thickened. The surfaces were exfoliating and striated. Most of the involved nails were separated from their underlying beds, and the under surface of the nail plates were crumbly and irregular. Scrapings from the under surface of the nails resulted in isolation from the toes of a pure culture of Monilia. An unidentified hyphomycetic organism was recovered from the under surface of the left thumb nail. Cutaneous testing with a filtrate of the culture of Monilia produced an erythematous, edematous, local reaction, 9 by 7 cm., which appeared several hours after the injection. Vaccine therapy was started on Feb. 19, 1940, with favorable results to date.

DISCUSSION

DR. ANKER K. JENSEN (by invitation): I believe the treatment of fungous diseases with fungus vaccines is yet in the experimental stage. One cannot be sure that some of the cures are due to their use. Dr. Lewis stated (Lewis, G. M., and Hopper, M. E.: An Introduction to Medical Mycology, Chicago, Year Book Publishers, Inc., 1939) that their use as a therapeutic agent is doubtful but that they are of value from a diagnostic standpoint.

DR. JULIUS SCHOLTZ: I think the result is remarkable.

DR. SAMUEL AYRES JR.: I have not prepared vaccines by Dr. Jacobson's method. My vaccines have all been made by the carbon dioxide method. I have not seen any beneficial results, although this failure may have been due to the preparation of the vaccines.

DR. A. FLETCHER HALL JR.: When I saw this patient about two years ago, the condition did not look like a monilial infection. There was a great deal of thickening of the toe nails and no friability. The patient kept his nails thinned by constant filing parallel with the surface. Whatever the cause, the result is excellent, and the patient shows an entirely different-looking set of nails than he did two years ago.

Early Bilateral Blepharochalasis. Presented by DR. PAUL D. FOSTER.

I. W., a white woman aged 25, complains of an eruption of the eyelids that began as a slightly reddened, edematous swelling of the upper and lower lids of both eyes. The lesions have become more pronounced. Examination of the blood showed a negative serologic reaction, 83 per cent hemoglobin, 4,500,000 erythrocytes per cubic millimeter, a color index of 0.92, 7,700 leukocytes per cubic millimeter, 39 per cent polymorphonuclear leukocytes, 53 per cent lymphocytes, 7 per cent monocytes and 1 per cent eosinophils. The treatment has consisted of the application of roentgen radiation to the lids, with the use of the contact mercury shield and a mild emollient ointment.

DISCUSSION

DR. JULIUS SCHOLTZ: This case corresponds closely to those described by Michelson and Laymon (Lichen Planus of the Eyelids, ARCH. DERMAT. & SYPH. **37**:27-29 [Jan.] 1938. I have encountered 1 other case, that of Dr. C. Russell Anderson.

DR. KENDAL FROST: Although the reticulum of the lesions in this case is much finer than that in the case to which Dr. Scholtz refers, there are certain similarities, and the condition in this case may be lichen planus of the eyelids. Incidentally, the early improvement in the other case did not continue. The last time I saw the patient she was not well.

A Case for Diagnosis (Granuloma Pyogenicum?). Presented by Dr. THOMAS W. NISBET, Pasadena, Calif.

D. M., a boy aged 7 months, has a lesion on the penis that appeared shortly after birth and lesions in the mouth and in the nose that appeared during the past three months.

The dermatologic examination shows a granulomatous lesion, the size of a large pea, on the frenum of the penis. A similar lesion is located in the left nostril, which is almost completely occluded by the growth. Two smaller lesions are present in the mouth: one on the anterior gingival margin of the lower jaw and the other on the inner surface of the left cheek.

A smear from the gingival lesion showed many large gram-positive cocci growing in pairs, tetrads and small clumps. Occasional gram-negative bacilli were also seen. No fungi could be found. The histologic examination of the lesion in the nose revealed granulomatous tissues. The Wassermann reaction of the blood and the results of dark field examinations were negative.

DISCUSSION

DR. KENDAL FROST: This case is one of the most interesting that has been presented for a long time. The two possible diagnoses which come to my mind are molluscum contagiosum and granuloma pyogenicum. The location is unusual for either.

DR. THOMAS W. NISBET, Pasadena, Calif.: I have no idea what the condition is. I thought of granuloma pyogenicum because, according to the history, the lesion bleeds easily.

DR. H. C. L. LINDSAY: I suggest the diagnosis of periadenitis mucosa necrotica. I encountered a case in which lesions such as these occurred in the mouth of a baby. There were also lesions in the mouths of the mother and the grandmother. The mother had similar lesions in the vagina. Those on the baby left scars.

CHRIS R. HALLORAN, M.D. *Chairman*

SAUL S. ROBINSON, M.D., *Secretary*

May 14, 1940

Lichen Planus of the Lips and Mouth. Presented by DR. NELSON PAUL ANDERSON and DR. O. M. STOUT (by invitation).

J. W., a Negress aged 37, complains of pigmentation of the lips of one and one-half years' duration. The discoloration has gradually increased and now affects the buccal mucous membranes. The Wassermann reaction of the blood was negative.

DISCUSSION

DR. KENDAL FROST: I have under my care at present a white woman with extensive lichen planus of the mouth and superficial erosions on the gums of the same type as in this case, a condition which I have never encountered heretofore. I also have never seen pigment on the mucous membranes in association with lichen planus, but that is probably a racial characteristic in Dr. Anderson's case.

DR. SAMUEL AYRES JR.: I am not convinced of the diagnosis. I feel that there is in one or two places, in addition to the appearance that suggests lichen planus, distinct evidence of gingivitis, with a certain amount of membrane formation. Whether the gingivitis is a streptococcic or possibly a monilial infection I am not able to say. I believe that the condition may be lichen planus plus something else. I do not think one could say what the condition is with the amount of observation that has been given to the condition tonight.

DR. NELSON PAUL ANDERSON: This case is a typical one of lichen planus. The unusual feature is the amount of pigmentation that has occurred on the gums and buccal mucosa, and this is present while the lesions of lichen planus are in a state of activity.

Multiple Benign Cystic Epithelioma. Presented by DR. NELSON PAUL ANDERSON.

L. C. B., a white woman aged *32*, has noted the slow development of multiple small nodules on the face during the past few years. Scattered over the face are five or six solitary, split pea-sized, grayish white, cystic-appearing lesions. The histologic examination showed the typical picture of benign cystic epithelioma.

DISCUSSION

DR. ANKER K. JENSEN (by invitation): This case made me think how careful one has to be. Surely, if I had seen the lesions on the face and not the microscopic section, I should have missed the diagnosis.

DR. NELSON PAUL ANDERSON: I wish some one would tell me what to do for this condition besides making a diagnosis.

DR. SAUL S. ROBINSON: I had a patient a few years ago with a condition like this that was rather extensive along the nose and the upper lip. Electrodesiccation and roentgen radiation were administered. Smooth, flat scars resulted, and the patient was well pleased.

Telangiectasia Following Infantile Eczema. Presented by DR. NELSON PAUL ANDERSON.

S. C. M., a Mexican girl aged 5 years, presents numerous solitary dilated telangiectatic blood vessels in the center of both cheeks. She had infantile eczema that began when she was 1 year old and persisted for about a year. After the eczema cleared, the present condition was noted. There is no history of any light treatments.

DISCUSSION

DR. JULIUS R. SCHOLTZ: I suggest a diagnosis of familial telangiectasia. This patient shows telangiectasia not only of the cheeks but of the mucous membrane of the lower lip. There is also a history that the girl's brother has frequent nosebleeds. My impression is that the eczema probably is not related.

DR. L. F. X. WILHELM: I am inclined to agree with Dr. Scholtz about the hereditary characteristics.

DR. NELSON PAUL ANDERSON: I am not sure that this telangiectasia followed the eczema. Sometimes one has to present a case with a questionable diagnosis in order to provoke a discussion. Hereditary telangiectasia is eliminated, in the first place, by the symmetry of the eruption; and secondly, there is no family history of this disease. I have seen both the father and the mother, and they are apparently normal. I thought that the patient presented a striking picture. I was prompted to present this case because physicians so often glibly tell the parent that when the eczema clears up the skin is going to be entirely normal.

DR. WALTER SCHWARTZ (by invitation): I noticed among persons I have recently examined that telangiectasia is rather common to men exposed to the

sun. I have also noticed that telangiectasia is common in those who are exposed to heat and to petroleum. Perhaps she had been out in the sun and telangiectasia resulted, provided it wasn't present before the eczema began.

DR. NELSON PAUL ANDERSON: The patient's brother, younger than she, has definite eczema.

A Case for Diagnosis (Boeck's Miliary Lupoid? Leprosy?). Presented by DR. A. FLETCHER HALL JR.

T. M., a Negro aged 20, complains that a nodule appeared on the right nasolabial fold one year ago. This lesion was followed within a few months by similar lesions in the corresponding location on the left side of the face and on the center of the cartilaginous portion of the nose. These lesions have broadened, and new nodules have developed, confluent with the original lesions. The central nasal lesion has broadened to form a plaque. The nodules occasionally become slightly inflamed for a few days but usually are inactive and asymptomatic. The patient believes that the nose has broadened during the past year.

Examination shows a linear group of confluent noninflammatory nodules, each nodule being about 2 mm. in diameter, on each side of the nose, just proximal to the ala nasi. Across the broadest surface between these areas is a slightly elevated, sharply bordered, noninflammatory, oval smooth plaque. Comedos are scattered over the face. Several nodular lesions on the forehead resemble acne.

The Eagle and Kline blood tests for syphilis gave negative reactions. Scrapings from the intranasal mucous membranes showed no acid-fast bacilli. The intradermal tuberculin test (with a dilution of 1 to 100) gave a negative reaction. The histologic section showed many acid-fast, gram-positive bacilli in the sebaceous ducts and orifices.

DISCUSSION

DR. MAX J. WOLFF: Clinically, I can see no evidence of leprosy in this patient. He has, on the other hand, lesions on the forehead and cheeks suggestive of acne.

DR. H. C. L. LINDSAY: I thought possibly the lesion on the nose was due to acne.

DR. NELSON PAUL ANDERSON: I am more or less responsible for asking Dr. Hall to present this case. Dr. Stout intended to present a patient from the Los Angeles County Hospital, one whom Dr. Frost will remember and whom Dr. Ormsby saw about a month ago. He is a Mexican boy with sarcoid-like lesions on both legs. Dr. Ormsby had no hesitation in making a clinical diagnosis of leprosy. The boy has a 4 plus Wassermann reaction of the blood. Strangely the lesions are rapidly responding to bismuth therapy. They are not the lesions of tertiary syphilis.

DR. A. FLETCHER HALL JR.: When I first saw this patient the clinical appearance suggested sarcoid. I took a specimen of tissue, sent it to the pathologist at the Santa Monica Hospital and asked for an acid-fast stain, as well as the usual hematoxylin and eosin stain. The pathologist told me there was a great number of acid-fast bacilli in bundles and thought the condition might be leprosy. When I looked at the section, I did see many acid-fast bacilli, but they were all in the ducts and orifices of the sebaceous glands. None were within the tissue proper. I do not know whether they are acid-fast bacilli or not; it seems to me that the smegma bacillus is acid-fast. The fact remains that there were a great number of acid-fast bacilli in the sebaceous orifices. The histologic picture does not resemble that of any disease in particular, unless possibly rhinophyma. I am at a loss to make a diagnosis. I do not believe this condition is acne because there is a definite plaque of a year's duration without inflammation. I should probably have not suggested leprosy as a possible diagnosis, because it is obvious that the section is in no way suggestive of that entity. I should like to know what the disease is—it is easy to tell what it isn't.

Leiomyoma Cutis. Presented by Dr. Saul S. Robinson.

Mrs. L. A. G., aged 37, has had red nodules on the left forearm and back since early childhood. The patient states that the lesions contract and become tender and painful during cold weather.

The examination reveals multiple, discrete, pea-sized to cherry-sized, elevated, brownish red, firm nodules on the extensor surface of the left forearm and on the back. Some of the lesions are tender to touch.

DISCUSSION

Dr. Kendal Frost: I agree with the diagnosis, although I also believe that histologic confirmation is necessary. There is absence in this case of the lesion which I feel is probably the only characteristic gross one, namely, a coral pink globular papule, which is apparently the earliest lesion. Histologically these papules are solid, smooth muscle. At times a vermicular movement can be seen on their surface. In my case (*J. A. M. A.* **83**:906 [Sept. 20] 1924) the lightest touch to these lesions was followed by exquisite pain.

CHICAGO DERMATOLOGICAL SOCIETY

Herbert Rattner, M.D., *President*

Michael H. Ebert, M.D., *Secretary*

Feb. 21, 1940

Naevus Unius Lateris (Angiomatous). Presented by Dr. Earle R. Pace (by invitation).

A blonde girl aged 2 years and 3 months is presented from the dermatologic department of the Research and Educational Hospital, University of Illinois. She has a bandlike angiomatous eruption of the right lower extremity, which was first noted at the age of 1 year and 2 months. It extends from the lower part of the right buttock downward in an irregularly widening strip over the thigh and leg to the shoe top. On the leg it occupies almost the entire lateral half of the surface. It consists of small pinhead-sized to pea-sized flat-topped red papules, irregularly grouped. Vitopressure removes all the redness and reveals depigmentation of the overlying epidermis. Most of the papules seem purely angiomatous, but a few have a slight follicular keratotic element. The condition is asymptomatic. There are questionable residues of somewhat similar lesions on the right arm. The mother states that there was a lesion on the left side of the lower lip earlier in life, which had been considered a "birthmark."

DISCUSSION

Dr. L. M. Wieder, Milwaukee: I agree with the diagnosis. I suggest treatment with solid carbon dioxide.

Dr. M. H. Ebert: I wonder if this case might not be one of angioma serpiginosum. The lesions are of the type that is described in that disease. They are somewhat annular. It would be interesting to know if there were any absorption of the old lesions and progression of new ones.

Dr. Earle R. Pace (by invitation): I cannot answer Dr. Ebert's question because I have had the case under observation for only three or four weeks.

Pseudoxanthoma Elasticum. Presented by Dr. Oliver S. Ormsby.

In this boy aged 14 the condition has been present for twelve years. The first change was noticed around the umbilicus when he was 2 years old. The lesions

spread peripherally and cleared centrally, according to the recollection of the patient's mother. New lesions have developed on the sides of the neck during the last six months. At present there is a diffuse eruption on the abdomen except for a palm-sized area in the center which is now clear. The eruption is also present on the sides of the neck. The primary lesion is apparently a match head–sized flat papule, slightly elevated, presenting a yellowish tinge. On diascopic pressure the yellow tinge becomes more evident. There are no subjective symptoms.

The histologic changes described by Dr. Ebert are as follows: In the sections stained with hematoxylin and eosin, the principal change was seen in the midcorium. In a large oval area the collagen bundles were smaller than normal and compressed by numerous small, amorphous, basophilic masses. The elastic tissue was stained with Weigert's stain. In the affected area it was fragmented. Some of the elastic fibers were swollen and transversely jointed. There were also many small, irregular pale-staining amorphous masses.

No striae were detected in the choroids by Dr. Von der Heydt. He did report a mottled condition in the choroid in the right eye, however, together with a few peculiar choroidal dots on the left. The examination was not completely satisfactory, because it was not possible to use a mydriatic.

DISCUSSION

DR. F. E. SENEAR: The lesions on the sides of the neck were characteristic, but I do not recall having seen pseudoxanthoma elasticum on the abdominal region before, and I probably should not have thought of that diagnosis had the disorder not been present on the neck also.

DR. C. W. FINNERUD: I did not see the patient, but I saw the sections. On first glance the condition appeared definitely to be pseudoxanthoma elasticum. The greater part of the change is in the collagenous tissue, much more than in the elastica. Many of the elastic fibers in the involved area are of normal appearance.

DR. M. R. CARO: The changes in the elastic fibers are not as pronounced as those ordinarily seen in pseudoxanthoma elasticum, but I thought that the section was compatible with that diagnosis.

DR. OLIVER S. ORMSBY: I had hoped that the condition in this case would prove to be an early sclerodermoid nevus. I reported such a case about three years ago (Ormsby, O. S.: Diseases of the Skin, Philadelphia, Lea & Febiger, 1937, ed. 5, p. 536), and no others have been observed. When tissue was excised in the present case it resisted the knife as though there were sclerotic changes, but the histologic sections definitely ruled out a nevus. The only condition in which changes in the elastic tissue such as the present ones are found is pseudoxanthoma elasticum.

DR. M. H. EBERT: In regard to the histologic sections, I do not believe that with the use of the Weigert stain the discoloration was complete, which was a little confusing. There were many amorphous masses throughout the section, which I interpreted as degenerated elastic tissue. I thought that some of them perhaps had been calcified. In the literature on this disease, the term "naevus elasticus" has been suggested, as Dr. Finnerud knows. I think the term might well apply in this case.

DR. OLIVER S. ORMSBY: This condition is rare. I doubt if any one here has encountered more than 3 or 4 cases. There may be changes in some of the cases that are not classic, yet they represent the same disease. I am glad to hear Dr. Finnerud state that the disease resembles pseudoxanthoma elasticum more than any other disease, though it is not classic.

I think the ocular changes are important because, while striae were not demonstrable with the hasty examination, I think they will be when a mydriatic is used and the retina is properly shown. The mottling found there was characteristic of what is seen in pseudoxanthoma elasticum.

A Case for Diagnosis (Mycosis Fungoides?). Presented by DR. F. E. SENEAR and DR. F. J. KENDRICK (by invitation), Gary, Ind.

Mrs. W., aged 35, was seen in June 1938, at which time she presented a generalized bullous eruption due to barbiturate-sunlight sensitization, which subsided with ordinary treatment. Six months later she was seen with an eruption on the back of the neck, the breasts and the left forearm consisting of grouped, flat, violaceous, papular lesions more or less polycyclically arranged. The results of histologic examination were not conclusive, but lichen planus was considered as a possible diagnosis. Most of the lesions cleared up by treatment with a bismuth compound intramuscularly and roentgen rays locally. Four months ago the patient was seen again with nondescript eczematoid patches chiefly on the arms and neck.

Now the patient presents slightly infiltrated, somewhat configurated, dull-colored eczematoid patches on the dorsa of the forearms and on the right side of the neck. I have considered parapsoriasis, mycosis fungoides and lupus erythematosus as possible diagnoses. A histologic section is shown.

Mycosis Fungoides (Prefungoid Stage). Presented by DR. F. E. SENEAR and DR. F. J. KENDRICK (by invitation), Gary, Ind.

Mrs. B., aged 45, has had generalized pruritus accompanied by an eruption for fifteen years. Lately the itching has been more persistent and the eruption, instead of fading periodically, has become more pronounced.

Examination reveals polycyclic, annular, marginated, slightly scaly, slightly infiltrated patches on the inner aspects of the thighs and calves, in both groins and in a smaller area on the chest. The eruption was much more pronounced ten days ago, before the administration of ¼ unit of roentgen rays to the involved areas. Serologic reactions were negative. A histologic section is shown.

DISCUSSION OF CASES OF MYCOSIS FUNGOIDES

DR. H. R. FOERSTER, Milwaukee: These 2 cases are rather difficult to discuss because neither eruption showed a clear picture of the condition suggested for diagnosis. In the first patient the lesions on the forearms showed none of the characteristics of lupus erythematosus. The morphologic changes and distribution suggested a toxic erythema of the multiforme type, with the possibility of photosensitivity having caused the lesions to be localized on exposed surfaces. This possibility is also suggested by the history that last summer she had an actinic dermatitis which was apparently more than a sunburn following the ingestion of a barbiturate and exposure to sunlight. The lesions did not suggest lichen planus to me, but I have seen lichenoid eruptions in cases of actinic dermatitis.

The second patient may have early mycosis fungoides of the prefungoid type, as suggested by the history and distribution and configuration of the lesions and by the histologic section, but the disease has apparently not developed to the stage at which one can state with certainty that it is more than that type of dermatitis.

DR. F. E. SENEAR: I saw the first patient several days ago and was unable to come to any conclusion as to the diagnosis. I thought of psoriasis and parapsoriasis, in addition to several conditions that Dr. Foerster suggested. I do not think the case is one of classic mycosis fungoides.

DR. L. F. WEBER: In the first case I suggest as a diagnosis the condition described by both Cannon and Sulzberger, allergic dermatitis simulating lymphoblastoma. While the eruption today does not fit in with that possibility, I think there is a likelihood that it may do so some time later.

Syringocystoma Confined to the Face. DR. L. F. WEBER.

Mrs. M. McK., an American woman aged 39, for the past fifteen years has had an eruption of the cheeks, nose and eyelids. The lesions are from 1 to 4 mm.

in diameter. They are round, smooth papules and nodules. Many are discrete and a few are closely aggregated. They are soft. The color is yellowish; some lesions are lighter than others, and a few have a waxy appearance. Slight itching is present at times. The histologic diagnosis was syringocystoma.

DISCUSSION

DR. J. H. MITCHELL: I should like to suggest the use of the spark. I often treat similar lesions with this method, with satisfactory results.

DR. L. F. WEBER: My object was to show that the eruption was limited to the face. Usually one would expect to find lesions on the chest and back. I am grateful to Dr. Mitchell for his therapeutic suggestion.

Lupus Erythematosus. Presented by DR. HERBERT RATTNER and DR. IRENE NEUHAUSER (by invitation).

E. B., a white woman aged 62, states that nine years ago her eyes became red, slightly painful and sensitive to light, and this condition was accompanied by lacrimation. About one month later redness developed on the eyelids, which she attributed to the drops used in her eyes. At that time a diagnosis was made of conjunctivitis of unknown origin and dermatitis. Since that time she has had frequent recurrences of ocular symptoms and exacerbations of the lesions on the face, which have never completely cleared up. She has never noticed any seasonal changes but thinks the condition is made worse by ultraviolet irradiation, which she is receiving for the eyes.

She presents superficial, slightly infiltrated, erythematous lesions on the lower eyelids. The lesions have a fairly well defined border and are scantily covered with scales. Some patches are puffy in appearance, with little tendency toward scaliness and little evidence of atrophy. There are some ill defined, superficial patches in the nasolabial fold, on the tip of the nose and on the mucocutaneous border of the lips.

Recent examination of the eyes by an ophthalmologist showed edema of the conjunctiva, with scarring.

Histologic examination showed a thin parakeratotic scale. The epidermis was thinned and showed considerable intracellular edema. In one place a small vesicle was present. The upper part of the corium showed edema and degeneration of the collagen and elastic fibers. The blood vessels were dilated and were surrounded by loose mantles of lymphocytes and a few histiocytes.

DISCUSSION

DR. L. F. WEBER: When I looked at that patient I was impressed that she probably had contact dermatitis, but after looking at the section I agree with the presenters' diagnosis.

DR. F. E. SENEAR: I saw this patient several days ago, and today was struck by the change in the clinical appearance since then. I am still of the opinion that the condition is lupus erythematosus. I do not think many physicians have seen many patients with lupus erythematosus involving the eyes. It is interesting that the ocular picture today is more like that which occurs in association with rosacea. I do not mean to suggest that the disease present is rosacea, but the ocular changes are not those which are usually seen on the conjunctivas of patients with lupus erythematosus.

DR. OLIVER S. ORMSBY: Do you think the ultraviolet irradiation aggravated the condition?

DR. IRENE NEUHAUSER (by invitation): We have been watching the patient for several weeks, and the picture changes each time we see her. The ultraviolet irradiation for the eyes may be responsible for some of the changes, but it does not seem to make the condition worse.

DR. OLIVER S. ORMSBY: In my experience sunburn is hazardous in cases of lupus erythematosus. Recently I saw a patient who succumbed to acute disseminated lupus erythematosus which was precipitated last summer by sunburn.

DR. M. R. CARO: The histologic picture is compatible with that of lupus erythematosus. There is a small vesicle in the epidermis which is not ordinarily seen in lupus erythematosus, but this may have been produced by some external agent.

DR. C. W. FINNERUD: Dr. Kren (*Arch. f. Dermat. u. Syph.* **83**:13, 1907), in describing lesions of lupus erythematosus of the mouth and mucous membrane elsewhere, described involvement of the conjunctiva in the chronic discoid variety. Such involvement was also described by Klauder and DeLong (*Arch. Ophth.* **7**: 856 [June] 1932).

DR. M. H. EBERT: Dr. Rattner will remember a Negro in the Cook County Hospital who had extensive lupus erythematosus with involvement of the conjunctivas. He was treated with injections of bismuth compound, and the ocular lesions responded rapidly. I think the condition in this case is lupus erythematosus of the conjunctiva.

Scleroderma (Diffuse and Circumscribed). Presented by DR. T. BENEDEK (by invitation).

Xanthomatosis. Presented by DR. M. H. EBERT.

Mrs. M. K., a white woman aged 36, complains of yellowish nodules on the fingers, jaundice and pruritus. On about April 1, 1939 she noticed that the skin turned yellowish overnight. There was no pain; itching was moderate. There was fulness after meals, with relief by regurgitation and elimination of gas. Various diets failed to relieve any of the symptoms. She was admitted to the Cook County Hospital in June 1939, where on operation a gland was removed from a site adjacent to the common duct. Up to this time she had lost 32 pounds (14.5 Kg.) in weight. She was readmitted in November 1939 for a check-up, with the jaundice, itching, bloating and belching still present. While in the hospital she first noticed the formation of yellowish "calluses" on the fingers. There has been a progressive enlargement of these up to the present time.

Examination reveals a moderate icterus of the skin and scleras. The skin appears dry and lichenified and shows excoriations. On both legs are small crusted papules. No oral lesions are demonstrable. The liver is 3 fingerbreadths below the costal margin. The spleen is not palpable. On the flexural creases of the fingers are linear hard waxy yellowish nodules raised about 2 mm. from the surface of the skin. These are slightly tender. On the lower right lid at the outer canthus of the eye is a small, yellowish, split pea–sized plaque. On eversion of the lower lid this plaque is seen to be merely an extension of a xanthomatous nodule situated on the conjunctival border of the lower lid.

The gland removed at operation in June showed benign hyperplasia. In November the icteric index was 75 and the cholesterol content of the blood 1,000 mg. per hundred cubic centimeters, with 533 mg. cholesterol esters. Three weeks ago the icteric index was 93.6 and the cholesterol content 1,100 mg., with cholesterol esters 889 mg. At present the cholesterol amounts to 1,288 mg., with cholesterol esters 1,100 mg., the phosphorus to 9.25 mg. (normal 4 mg.), the phosphatase to 79.15 units (normal 3 units) and total lipoids to 5.33 mg. per hundred cubic centimeters.

In November 1939 roentgenograms of the esophagus, chest and abdomen were normal except for the nonvisualization of the gallbladder.

Tissue from the flexor surface of the finger fixed in solution of formaldehyde was studied histologically. All sections were frozen, and a hematoxylin-eosin stain was used. There were many groups of large cells, with typical foamy

cytoplasm in the upper part of the corium and a few Touton gram cells. There were marked hyperkeratosis and parakeratosis. When stained with sudan III, the foam cells were seen to be packed with lipoid granules and crystals. Lipoid material was found in some of the intercellular spaces of the rete mucosa.

DISCUSSION

DR. M. H. EBERT: Obstructive jaundice, whether the cause is a malignant condition or not, results in hyperlipemia and not so much in hypercholesteremia. In this case both the cholesterol esters and the total lipids were greatly increased. Our chemical studies have been limited to what could be done at the hospital. In all cases of obstructive jaundice there is an increase in the lipids, but xanthoma does not develop in all of them. In a large percentage of cases xanthoma occurs at the site of pressure on the fingers and hands.

Bowen's Disease. Presented by DR. THEODORE CORNBLEET and DR. H. C. SCHORR (by invitation).

M. D., a Negress aged 54, three years ago noted a small bean-sized lump under the left axilla. This broke down and left a small ulcerating surface which spread gradually by peripheral extension until it reached the present size. Itching has been marked. The patient has been treating the condition by washing it with solution of boric acid and then applying a phenol ointment.

Examination shows a large superficially ulcerating lesion extending across the entire axillary fold on the left side. It extends down the thorax about 3 inches (7.5 cm.) in semicircular fashion and down the medial surface of the arm in like manner for approximately 1 inch (2.5 cm.). The center portion shows an eroded surface with a grayish white membrane covering various parts in a bizarre pattern. The borders are scalloped and show increased pigmentation.

The results of Kahn and Wassermann tests were negative. There were no fungi on direct smear or culture.

Histologic examination of a section of skin revealed a portion of relatively normal skin with a thin stratum corneum and a slight acanthosis of the rete pegs. Adjacent to the normal skin the stratum corneum was missing and replaced by a necrotic membrane infiltrated by many polymorphonuclear leukocytes. The stratum granulosum was likewise missing, but the rete pegs showed decided acanthosis. The cells in the rete layer were large. The nuclei in places were irregular, and atypical mitotic figures were seen. Many of the nuclei contained distinct nucleoli. The line of demarcation between the rete pegs and the papillary layer was distinct. The papillary layer was heavily infiltrated by numerous lymphocytes.

This picture is compatible with a diagnosis of Bowen's disease.

DISCUSSION

DR. L. M. WIEDER, Milwaukee: I think the border of the lesion posteriorly would suggest clinically a superficial basal cell lesion. The histologic diagnosis, however, showed that the condition was not that disease.

Pityriasis Rubra Pilaris. Presented by DR. DAVID V. OMENS and DR. WALTER W. TOBIN (by invitation).

The mother of this child (R. C., aged 2 years and 3 months) states that three weeks after birth the child's hands and feet became reddened as though sunburned, and then scaly and roughened. Within a month the whole body became similarly involved. The child scratches almost constantly. Treatment with external applications has not helped.

The family history is essentially normal. There are no other children in the family.

The child presents an almost universal dry, scaling erythematous dermatitis which involves especially the hands and feet, forearms and legs, lumbar area and nucha. The hyperkeratosis and pinhead-sized follicular papules give the appearance of gooseflesh. The palms and soles are lemon yellow.

The urinalysis and the blood count gave negative results. A tuberculin test, with 0.1 cc. of 1 : 1,000 solution, gave a negative result.

DISCUSSION

DR. J. H. MITCHELL: I presented this case in the clinic as one of probable pityriasis rubra pilaris. I think the diagnosis was correct.

DR. M. OPPENHEIM (by invitation): There is no doubt that the child shows lichen rubra acuminatus or pityriasis rubra pilaris (Devergie's disease), which the Viennese school identifies as the same. There is only one other diagnosis that might come into consideration and which is the second form of congenital ichthyosis: erythroderma exfoliativum congenitum. But in this case that diagnosis can be excluded, because the skin shows normal areas, which are never found in ichthyosis congenita.

Leprosy. Presented by DR. M. H. EBERT and DR. DAVID V. OMENS.

Kaposi's Sarcoma. Presented by DR. HERBERT RATTNER and DR. IRENE NEUHAUSER (by invitation).

J. Y., a laborer aged 59, born in Jugoslavia, first noticed a lesion on the right thenar eminence four or five years ago, followed by the development of a small lesion on the right lower extremity, which gradually became larger. New lesions have appeared from time to time on the extremities and on the left buttock. To the patient's knowledge, none of the lesions has disappeared spontaneously. He came to the clinic because of swelling and a feeling of heaviness of the lower extremities. He has had no other objective symptoms.

Examination reveals a firm, sharply defined, raised, infiltrated, bluish red triangular-shaped plaque on the anterior surface of the lower third of the right leg. On the upper and lower extremities and on the left buttock are similar bluish red lesions varying in size from that of a pea to that of a silver dollar. Some lesions have coalesced to form diffuse, ill defined infiltrations. There is some swelling of a boardlike character involving both feet and ankles. The liver is palpable; the inguinal glands are enlarged and firm.

The Kahn reaction was negative. A blood count revealed 96 per cent hemoglobin and 4,660,000 erythrocytes and 7,500 leukocytes per cubic millimeter, with a differential count of 71 per cent neutrophils, 21 per cent lymphocytes, 2 per cent eosinophils, 1 per cent basophils and 5 per cent monocytes. A roentgenogram of the chest and pelvic bones was normal. The nonprotein nitrogen of the blood amounted to 36 mg., the creatinine to 1.9 mg. and the sugar to 79 mg. per huudred cubic centimeters. Sternal puncture showed essentially normal bone marrow, with some evidence of nonspecific irritation.

Histologic examination of tissue taken from the leg showed the epidermis to be flattened. The upper part of the corium was edematous. Throughout the corium were many newly formed blood vessels surrounded by a diffuse cellular infiltration and by many brown pigment granules. These were shown to be iron pigment by Perle's prussian blue reaction.

DISCUSSION

DR. M. H. EBERT: I took a specimen recently from an early lesion in this patient, which showed a decided deposition of hemosiderin, proliferation of the blood vessels and changes in the perivascular connective tissue characteristic of Kaposi's sarcoma.

Juxta-Articular Nodes; Syphilis. Presented by DR. S. J. ZAKON (by invitation).

R. K., an American man aged 32, first noted the appearance of hard, painless growths on his palms seven years ago. These have been increasing in number and in size, and in the last two years he also has noted similar growths on his elbows.

Examination on Jan. 6, 1940 revealed the presence of hard, nontender, subcutaneous, symmetrically distributed, polylobulated nodes on both forearms about 5 cm. distal to the olecranon process. There were two nodes on each elbow. On both palms there were many (eighteen on each) hard, painless nodes and nodules, varying in size from a few millimeters to 2 cm. They were covered with hyperkeratotic skin and seemed to be attached to the overlying skin. None of the lesions bore any relation to the bursa.

The Wassermann and Kahn reactions were strongly positive.

One node was removed from the left elbow for histologic study.

The patient has received iodides and six injections of a bismuth compound thus far, and there is a definite diminution in the size of the growths.

DISCUSSION

DR. A. W. STILLIANS: This is the first case in which I have seen lesions on the palms. I understand they are not common.

DR. J. H. MITCHELL: This is the second case in which I have seen such large and numerous lesions on the palms. Dr. Ormsby's case was the first.

Pemphigus Vulgaris. Presented by DR. THEODORE CORNBLEET and DR. HERBERT RATTNER.

J. G., a white Polish man aged 64, presents a bullous eruption. He states that about four weeks ago he noticed tenderness of the tongue. One week later blisters appeared in his mouth, the right axilla and the right groin and on the toes of both feet simultaneously. Despite treatment by his physician for eczematoid ringworm of the toes, the condition has grown progressively worse. He denies having had previous attacks and states that he has been well all his life. His family history is irrelevant.

Examination of the mouth reveals numerous erosions of the tongue and buccal mucosa circumscribed by overhanging white epithelium. The lesions give off an offensive sweetish odor. The right axilla presents a walnut-sized crusted nodule which also emits this offensive odor. Present in the fold of the right inguinal region are several infiltrated elongated masses covered with vesicles, bullae and macerated skin.

In both cubital areas and on the buttocks are erythematous, edematous, raw and empty bullae, with the epithelium which covered the bullae hanging loose. The back presents a pinkish maculopapular eruption. All of the toes are acutely inflamed and edematous, while the interdigital spaces reveal denuded bleeding surfaces partially covered with necrotic grayish white epithelium. Nikolsky's sign cannot be elicited.

In the past five days the oral cavity has become less tender and the lesions have healed, especially those on the tongue. Also there has been some improvement of the toes and other areas involved. The patient has been taking sulfapyridine, one tablet four times a day for the past three days. Since admission his temperature has ranged from normal to 100 F.

The urine was normal. A blood count showed 102 per cent hemoglobin and 5,970,000 erythrocytes and 13,950 leukocytes per hundred cubic centimeters, with a differential count of 67 per cent neutrophils, 15 per cent eosinophils, 2 per cent basophils, 15 per cent lymphocytes, 1 per cent monocytes and microcytosis. The fasting blood sugar value was 93 mg. per hundred cubic centimeters. A Kahn reaction of the blood was negative. The nonprotein nitrogen content of the blood was 49 mg. and the uric acid content 4.6 mg. per hundred cubic centimeters.

Pemphigus. Presented by Dr. Theodore Cornbleet and Dr. Herbert Rattner.

A. A., a man aged 73, born in Scotland, was presented at the last meeting of the Chicago Dermatological Society (Arch. Dermat. & Syph., to be published), with a bullous eruption of the areas usually involved in Duhring's disease. Since then he has had almost a daily eruption of new vesicles and bullae either on the upper or on the lower extremities, with healing of the older lesions. He had a slight elevation of temperature, ranging from normal to 100 F., until February 15, when he was given sulfapyridine, one tablet four times a day; since that time his temperature has not risen above 99 F. New vesicles and bullae have developed since he has been taking sulfapyridine, but not as many or as tense ones as previously. Also his general condition has improved.

DISCUSSION OF CASES OF PEMPHIGUS

Dr. M. R. Caro: I have had no experience with sulfapyridine in the treatment of pemphigus. The treatment of pemphigus with sulfanilamide has not been entirely satisfactory. The 2 patients I treated originally are both dead. The man died of a cardiac complication and the woman of a pulmonary infarct from an infected bed sore. The skin of the latter patient was entirely clear until the day before death, when a profuse generalized vesicular eruption appeared.

Dr. F. E. Senear: It might be interesting to report on the child I showed last month (Arch. Dermat. & Syph. **42**:198 [July] 1940). The eruption was generally thought to be dermatitis herpetiformis. I believe Dr. Parkhurst said that sulfanilamide had been used, without effect. A member of the pediatric department gave the child sulfapyridine with rapid improvement. Treatment was stopped for a week, during which the condition recurred. With resumption of the sulfapyridine therapy, the child showed rapid improvement. This cannot as yet be accepted as conclusive evidence that sulfapyridine was responsible for the improvement.

Dr. Herbert Rattner: There is an interesting case at Michael Reese Hospital, that of a man treated with sulfanilamide for disease of the middle ear and then discharged as cured. He reentered the hospital after a week with the picture of exfoliative dermatitis, presumably from the sulfanilamide. He now has pemphigus foliaceus.

Dr. Oliver S. Ormsby: Concerning sulfanilamide in the treatment of pemphigus, I might say I have not had good results with it. I have had a patient under observation for eighteen years who had severe erythema multiforme. Each attack has lasted three or four months. Some of the time the lesions resembled a streptococcic infection, and at other times, Vincent's angina. Until four years ago the attacks were of such severity that he could not carry on work of any moment. His former attacks yielded best to arsphenamine. For four years he was comparatively free. About the middle of January he entered the hospital with the first attack he had had in four years, and his condition was serious. He was toxic and had a high temperature, and his mouth presented the appearance of a streptococcic infection. The mucosa of mouth, tongue, gums, pharynx, larynx and trachea was gone in some areas and covered with gray pellicles in other places. Swallowing was difficult. He also had other symptoms of erythema multiforme on the skin of the extremities. He was hospitalized and given sulfanilamide, and in two weeks his skin was entirely cleared. He was kept under treatment for another ten days. I believe the basis of his multiform erythema was an infection. The disease in his case was severe and resistant to treatment until the last attack.

Dr. Theodore Cornbleet: The use of sulfanilamide in Duhring's disease was called to my attention by statements in the literature, as well as by its favorable effect on the patient of whom Dr. Senear spoke at last month's meeting. The first case was presented as one of possible pemphigus. I think there is some question about that diagnosis. It is possible that this patient has erythema multiforme. The eruption started in the mouth and then extended down to the toes

where it was thought to be an acute eczematoid ringworm. The man was losing ground. In my opinion he shows decided improvement, especially of the mouth, since he was given sulfapyridine. He is as yet by no means on the way to complete relief, but I think it is well to record here that there is some progress in his case.

The man with dermatitis herpetiformis has also shown decided improvement with the use of sulfapyridine. It is true he showed some improvement before its use, but it seems to me that the improvement has been accelerated with the use of sulfapyridine.

Epidermolysis Bullosa Acquisita. Presented by DR. JAMES H. MITCHELL and DR. WALTER W. TOBIN (by invitation).

This girl, aged 13, states that approximately five years ago blisters began to appear on her hands, feet, elbows and knees, which caused little distress but left scars on healing. The blisters seemed to come in attacks at irregular intervals.

There is no familial history of any similar eruption.

Examination discloses dusky erythematous patches of the hands and feet, with noninflammatory bullae about the fingertips and the toes. There are also whitish atrophic areas on the dorsa of the hands as well as over the elbows and knees.

Examination of the urine and the blood gave negative results. The reaction to 0.1 cc. of a 1 : 10,000 dilution of tuberculin was negative. Histologic examination of the tissue taken from an active lesion showed acanthosis, with a large vesicle in the epidermis. The cutis was practically unchanged except for a reduction of elastic tissue.

DISCUSSION

DR. F. W. LYNCH, St. Paul: An interesting family history was obtained from 2 children whom I saw a few days ago with severe dystrophic epidermolysis bullosa. The parents are first cousins and have four children. The first and fourth are boys and have the disease mentioned. The second and third are girls and present no evidence of this disease. This history suggests that congenital dystrophic epidermolysis bullosa is transmitted as a recessive characteristic, as has been noted on numerous occasions. Sex linkage is also evident.

DR. JAMES H. MITCHELL: Dr. Tobin and I have discussed this case at some length, but I cannot satisfy myself that the diagnosis is correct. I do not know what it is.

DR. WALTER W. TOBIN (by invitation): I think the condition is a typical acquired form of dystrophia bullosa. The scars in association with vesicular and bullous lesions and the histologic picture would tend to prove that, because of the bullae in the epidermis with practically no infiltrate about them. There was some question of a vasomotor disorder being responsible since the condition is apparently a mild form.

A Case for Diagnosis (Psoriasis? Pityriasis Rubra Pilaris?). Presented by DR. M. H. EBERT.

V. M., a 17 year old Negro, presents a generalized follicular eruption. He states that he never had any disease of the skin except some sores on his scalp about three years ago, which healed in a few weeks with the application of a salve. His present eruption began about five weeks ago, as a scaly patch on the left thigh. Three weeks ago, all over the body and the extremities there developed small bumps, like "goose flesh," which itched moderately. The face and scalp became scaly at about the same time.

There is no history of any similar trouble or of tuberculosis in the family. The patient also states that he has not eaten fresh vegetables or fruits oftener than once or twice in two weeks.

Examination of the urine gave negative results. A Kahn reaction of the blood was negative. A blood count showed 86 per cent hemoglobin and 4,260,000 erythro-

cytes and 8,400 leukocytes per cubic millimeter, with a differential count of 55 per cent neutrophils, 2 per cent eosinophils, 3 per cent basophils, 25 per cent lymphocytes and 5 per cent monocytes; an occasional immature cell of the lymphocytic series was seen. The basal metabolic rate was — 9 per cent. The ascorbic acid content of the blood was 0.025 mg. per hundred cubic centimeters (normal, 0.74 to 1.38 mg.).

The physical examination gave negative results. The skin of the scalp, ears and face is covered with fine, firmly adherent scales. The lower lids are injected and drawn slightly down and outward. The neck, the extensor surfaces of the extremities, including the dorsa of the hands, and the sides of the trunk present mildly inflammatory acuminate firm papules situated at the mouth of follicles, and at the apex, a horny plug or scale which dips into the follicle. In the hairy areas a hair protrudes from the center of the papule. Some of the tops of the papules have been excoriated. On the thighs and elbows are a few variously sized and shaped flat plaques covered with a silvery scale. The skin of the palms is thickened. There is a generalized adenopathy.

Examination of the eyes showed the conjunctivas to be decidedly injected and granular, without the normal shining appearance; there was a faint tinge of yellow, suggestive of xerosis.

A roentgenogram of the lungs disclosed an increase of the hilar markings, with a small amount of fibrotic infiltration extending into the parenchyma; early tuberculosis was not ruled out, but the picture was not typical.

Histologic study revealed a decided thickening of the parakeratotic stratum corneum; the stratum granulosum in places was well developed, and in other places, a few papillae distant, there was complete absence of keratohyalin. There was decided acanthosis, with elongation of the narrow papillae. There was active migration of leukocytes in the intercellular spaces of the rete mucosa. There was some dilatation of the capillary loops in the papillae and a little round cell infiltrate about the vessels of the subpapillary layer.

DISCUSSION

DR. C. W. FINNERUD: I first saw the section and considered the histologic picture a good illustration of psoriasis. Then I saw the patient and found that the section was taken from one of the psoriasiform lesions of the forearm, one of the diffuse large patches which perfectly complements the histologic picture. The section showed parakeratosis in the hyperkeratotic horny layer. There were psoriasiform proliferation and cellular infiltration. On seeing all the different types of lesions I am of the opinion that some of the histologic changes have to be accounted for by the acuity of the process and that, instead of being psoriasis, the condition is pityriasis rubra pilaris.

DR. F. E. SENEAR: Not having seen the slides I did not think of psoriasis, though there were psoriasiform changes in some areas. My thought in view of the seborrheic feature on the face and with the involvement of the phalanges, despite the fact that there were no follicular plaques, was that pityriasis rubra pilaris was the most likely diagnosis. There was no involvement of the palms and soles, which may be accounted for by the acute character of the condition.

DR. J. H. MITCHELL: I am inclined to agree with the diagnosis of pityriasis rubra pilaris. On the lower part of the legs there are follicular papules. The papules elsewhere are rather rounded, with some of a flat type. If the condition is not that, I do not know what it is.

DR. M. OPPENHEIM (by invitation): From the clinical point of view I consider this interesting case as one of lichen planus follicularis generalisatus. I did not see the histologic slides. Some of the efflorescences, which are all located on the follicles, are polygonally shaped, have a plain surface with luster and are not prone to become confluent. The efflorescences in lichen acuminatus are much smaller, more pointed and have a spine on the top. In cases of dermatitis toxica

oozing and confluence are present. The efflorescences appear in the same order as those of lichen planus moniliformis.

DR. M. R. CARO: I think that histologically lichen planus is the one condition that can definitely be ruled out. The section I saw was compatible with the diagnosis of psoriasis. I think the follicular involvement can be accounted for in some degree by the fact that the patient has avitaminosis. I should like to see a section of tissue taken from one of the follicular papules on the abdomen.

DR. OLIVER S. ORMSBY: A few years ago I saw a patient who had symptoms resembling those seen in this patient. The condition eventually proved to be a toxic eruption. I suggest that a definite diagnosis be postponed until further observation can be made.

DR. HERBERT RATTNER: About a week ago when the man entered the hospital the picture was more that of pityriasis rubra pilaris than it is today. The lichenoid lesions are a new development.

DR. M. H. EBERT: One must bear in mind that the patient is a Negro. There is a great tendency among the Negroes to produce follicular lesions. A toxic eruption of any type may cause follicular lesions in Negroes, while it will not do so in white persons. Five or six years ago I had under observation a Negro who had what appeared to be pityriasis rubra pilaris. He was kept under observation for several weeks. The lesions faded and finally disappeared. I am convinced that he was suffering from a toxic eruption. Consequently, I am rather hesitant about making a diagnosis of pityriasis rubra pilaris in Negroes.

There seems to be some misunderstanding about the site of the biopsy specimen. It was taken from one of the early follicular lesions and not from a larger plaque. When I first saw this man the two diagnoses that suggested themselves to me were, first, acute psoriasis and, second, toxic eruption due to the medicine he had applied to the lesion. In favor of psoriasis was the presence of a palm-sized patch on the thigh with psoriatic scaling, as well as the type of scale on the follicular lesions. Kobner's phenomenon was present in at least two areas on the body, i. e., scaling follicular papules arranged along scratch marks. The appearance of the lesions has been considerably changed since that time. Ointments have been applied, which have largely removed the scaling.

The histologic findings were consistent with the diagnosis of psoriasis except for the absence of microabscesses under the stratum corneum. I think that from a consideration of the histologic picture pityriasis rubra pilaris can be ruled out. The choice lies between acute psoriasis and a toxic eruption. Psoriasis is rare in Negroes but does occasionally occur.

NOTE.—The lesions were practically clear in ten days. A diagnosis of toxic eruption appears most likely.

A Case for Diagnosis. Presented by DR. JAMES H. MITCHELL and DR. WALTER W. TOBIN (by invitation).

F. G., a man aged 54, complains of an eruption on his arms, hands and left leg of indefinite duration. He states that sores form repeatedly on his arms and hands but that they cause little pain.

The patient has been receiving antisyphilitic treatment in a city clinic since 1934 but has been irregular in attendance. Treatment was begun because of an inflammation of his right eye, which responded rapidly to antisyphilitic therapy but resulted in loss of vision of the eye. The serologic tests of the blood have given persistently positive results.

There is a masklike expression of the face, with a scar in the right cornea. The left eye is normal. The forearms, elbows and dorsa of the hands, as well as a palm-sized patch of the upper part of the left leg, show mottled erythema, whitish scars, pigmentation and ulcerated lesions. On the dorsa of the hands are several indolent bullae with serosanguinous discharge. The pain sense in the hands and forearms is greatly diminished, but the temperature sense is normal. The deep reflexes are normal.

Examination of the urine gave negative results, and the Wassermann reaction of the blood was positive.

DISCUSSION

DR. M. H. EBERT: I thought the condition was factitious dermatitis. The absence of sensation was noteworthy. I inserted the point of my penknife under the skin, and the patient did not notice it. The fact that he is right handed and that most of the lesions are on the left arm is suggestive. These facts and the appearance of the lesions make a diagnosis of factitious dermatitis probable.

DR. THEODORE CORNBLEET: I think the changes this man shows could be accounted for by organic changes in his nervous system. I suggest syringomyelia as a possible diagnosis.

DR. L. M. WIEDER, Milwaukee: I agree with Dr. Cornbleet that syringomyelia must be considered.

DR. M. H. EBERT: If I understood the history correctly, I believe the statement was made that an examination of the nervous system was made regarding the sense of heat and that of cold and that they were normal. This fact would rule out syringomyelia.

DR. WALTER W. TOBIN (by invitation): The masklike expression and the lowered response of the hands and forearms to pain indicates some neurologic cause. The sense of temperature is well retained. The man has had an insufficient diet, and some vitamin deficiency could well be present.

Sarcoidosis. Presented by DR. M. H. EBERT.

J. L., a Negro aged 47, presents multiple nodules of various sizes on the face and extremities. He first noticed small "bumps" on the face in July 1939. New lesions have appeared from time to time, and the patient states that some of the old ones seemed to disappear but not as fast as new bumps developed. He has lost about 29 pounds (13.2 Kg.) in the last five years. His brother died of tuberculosis in 1910 at the age of 40.

Physical examination gave essentially negative results. The skin of the face, forehead, ears, nostrils, shoulders and forearms presents ham-colored, shiny, slightly raised, indurated papules varying in size from that of a pinhead to that of a finger nail. There are no subjective symptoms except for the papules in the nostrils, which obstruct respiration.

A Mantoux test with a dilution of 1:10,000 gave a negative result and with a dilution of 1:1,000, an area of erythema and slight edema, 1 by 0.5 cm. The Kahn reaction of the blood was negative A roentgenogram of the hands and lungs revealed some osteoarthritis at the metacarpophalangeal articulation of the right hand and also of some of the interphalangeal joints; there was considerable rarefaction in the second phalanx of the fourth finger and possibly to some extent in the terminal phalanx; there was also a peculiar trabeculation of the second phalanx. The heart was not enlarged. There was considerable increase of the hilar markings on both sides, with slight infiltrative extension into the pulmonary parenchyma. The clinical picture is compatible with the diagnosis of sarcoid.

DISCUSSION

DR. C. W. FINNERUD: This case presents a beautiful example of superficial sarcoid of the face and other parts, cases of which in Negroes have been presented here so commonly; in most of them, however, there has been no osteoporosis or other evident signs of systemic involvement.

DR. M. H. EBERT: This is the type of condition that Dr. Nomland studied and considered clinically as sarcoid. Lichenoid nodules on the alae of the nose and on the back of the neck are frequently seen in Negroes. This patient has a general adenopathy. The changes that go with sarcoid were found in the lungs on roentgen examination. There was also demonstrated a rarefaction in the

phalanges. I think this condition belongs in the same group of diseases as Besnier-Boeck-Schaumann disease.

Syphilitic Glossitis. Presented by DR. M. H. EBERT and DR. DAVID V. OMENS.

N. B., a Negress aged 25, complains of enlargement of the tongue, which was first noticed three months ago. The tongue became tender, and shortly thereafter she noticed a thick, grayish coating on the left side, extending back to the base of the tongue. With a cotton pledget she was able to remove thick thumbnail-sized pieces of brownish material from the tongue. There is no previous history of a cutaneous eruption.

The patient presents hypertrophy of the tongue. The mucous membrane is covered by a yellowish plaque, irregular in outline. On the right side, running back from the tip, there is a deep fissure extending from the tip backward, about 2 cm. long and 0.5 cm. deep. The walls of the fissure are smooth and deep. The anterior half of the left lateral wall is necrotic and covered with a yellow membrane. There is a similar fissure running from the center of the tongue to the circumvallate papillae parallel to the first. At its anterior end the fissure branches in a stellate fashion. On palpation the entire tongue is infiltrated and nodular.

The Kahn reaction was doubtful on first examination. After ten days of potassium iodide therapy the Kahn reaction was positive. The Wassermann reaction was negative on two examinations.

Histologic examination of tissue removed revealed marked perivascular infiltrate, consisting principally of lymphocytes and plasma cells; there was a moderate proliferation of the endothelium.

DISCUSSION

DR. JAMES H. MITCHELL: I wonder if avitaminosis is present.

DR. H. R. FOERSTER, Milwaukee: This case is an important one for demonstration. I cannot recall when I have last seen acute syphilitic glossitis; undoubtedly the condition is uncommon and becoming increasingly so. The patients with glossitis commonly seen are in the chronic end stages with cicatricial contracture.

DR. M. OPPENHEIM (by invitation): The combination of a syphilitic condition with black, hairy tongue, as in this case, is interesting. There are two conditions of this kind: One is congenital, a nevus which does not affect the entire surface of the tongue; the other is due to irritation through certain substances.

I have succeeded in producing the condition artificially by brushing the surface of the tongue with tinctura ratanhiae (Kremeriae) and other substances containing tannic acid and a red dye. I consequently came to the conclusion that all keratoplastic substances applied on the tongue would produce hyperkeratosis of the papillae filiformes (Oppenheim, M.: Zur Aetiologie der schwarzen Haarzunge, *Wien. klin. Wchnschr.* **30**:712, 1917). Heidingsfield stated the opinion that a certain bacterium causes this condition. Mouthwashes, tobacco and black coffee can produce in susceptible persons this condition of the tongue, which disappears spontaneously if the irritation is stopped.

DR. H. R. FOERSTER, Milwaukee: I intended to comment on the black hairy tongue. I thought the condition in this patient was not a true black, hairy tongue but a condition resulting from poor oral hygiene, possibly occasioned by the swelling of the tongue. However, considering the possibility of black hairy tongue, I think the administration of nicotinic acid is worth trying.

DR. M. H. EBERT: I appreciate the discussion on black, hairy tongue and will follow the suggestion for the administration of nicotinic acid. The reason I showed this case was well stated by Dr. Foerster. The appearance of the scarred residue of former glossitis in old cases of syphilis is familiar. So far in my experience I have never had any cases of the acute or active stage. This condition is definitely not ordinary gumma of the tongue; there is no localized sloughing. The condition of the tongue in this patient has been changed by the administration

of potassium iodide. When the patient was first seen the tongue was considerably larger, and when it was grasped between the thumb and the finger there was a woody infiltrate in two areas. The fissures were much deeper and open at the base. With this small amount of therapy the tongue has improved greatly. I believe that this case is an instance of active syphilitic glossitis.

BRONX DERMATOLOGICAL SOCIETY

MARION B. SULZBERGER, M.D., *President*

HENRY SILVER, M.D., *Secretary*

Feb. 29, 1940

Sarcoidosis. Presented by DR. HENRY SILVER.

R. H., a Negress aged 25, married and childless, is presented from the clinic of Mount Sinai Hospital for Dr. William Leifer. She was first studied in April 1936, at which time there were lesions on the face and on the extensor aspects of the extremities. A clinical diagnosis of lupus miliaris disseminatus faciei and papulonecrotic tuberculid in a patient with late asymptomatic syphilis was made. Histologic examination confirmed the diagnosis of papulonecrotic tuberculid, but examination of tissue from the face revealed a picture suggestive of sarcoid. Intradermal injections of tuberculin in dilutions of 1:1,000,000 and 1:100,000 gave negative reactions. The blood count was normal. The Wassermann reaction was positive. Roentgenograms of the hands and wrists showed no changes in the bones. A roentgenogram of the chest showed infiltration at the root of the right lung and enlargement of the right paratracheal glands. The clinical picture suggested Hodgkin's disease.

The patient was given organic and inorganic arsenic. She did not continue the treatment and was not seen at the clinic until January 1938. When reexamined she stated that the cutaneous lesions had disappeared without therapy but had been reappearing gradually in the previous four months.

Examination at that time showed lesions involving the auricles, the face, the lips, the trunk, the buttocks, the extremities and the fingers. They were roughly of two types. 1. There were numerous papules and plaquelike lesions which reached the size of a silver dollar. These raised lesions were round, firm and the color of the skin or darker; some showed yellowish flecks. On the face several lesions were centrally depressed and hyperpigmented. 2. On the outer aspects of the arms and on the buttocks there were firm nodules in the skin or attached to it; none of the lesions were ulcerated. In addition, there was generalized adenopathy, with rather disproportionate enlargement of the epitrochlear glands. The spleen and liver were not palpable. The tendon sheaths on the dorsa of both hands were swollen but not acutely inflamed or tender.

An intradermal tuberculin test with a dilution of 1:1,000 and a patch test with tuberculin gave negative results. A blood count and urinalysis showed no abnormality. The Wassermann reaction was positive. A roentgenogram of the chest showed distinct diminution in size of the paratracheal glands since the previous examination (April 1936). The right hilar glands were still moderately enlarged but less so than before. A roentgenogram of the bones showed a cystlike area in the distal shaft of the proximal phalanx of the right middle finger. Similar changes were seen in the proximal ends of the middle phalanx of the right index finger and the terminal phalanges of the three middle digits of the left hand. There was a similar change in the lower end of the left ulna.

Histologic examination of a plaque on the right arm showed unimportant changes in the epidermis. The greater portion of the cutis was occupied by sharply

circumscribed accumulations of epithelioid cells. In the edge of one of these lobules there were a number of Langhans giant cells. A lesion on the face showed practically the same picture except that there were more giant cells. The histologic diagnosis was sarcoid of Boeck.

The patient was treated from February to May 1938 with cod liver oil, solution of potassium arsenite U. S. P. (Fowler's solution), a high carbohydrate diet and irradiation of the entire body with ultraviolet rays. The cutaneous lesions were unimproved, and there appeared swellings of the tendon sheaths on the dorsum of the right foot and above the right internal malleolus. From May 10 to August 16 she was given eleven intradermal injections of 0.1 cc. of old tuberculin in dilution of 1:100. At first there was no response to this treatment, but at the end of this period some of the cutaneous lesions had disappeared and others had flattened considerably. She was then given injections of old tuberculin in dilutions of 1:1,000 and 1:10,000.

By March 18, 1939 the cutaneous lesions were almost completely gone, but a roentgenogram of the chest showed that the process at the root of the right lung was somewhat increased and that there was enlargement of the hilar glands on both sides. There were also a faint nodular infiltration of the lower lobe of the right lung and an exaggeration of pulmonary markings on both sides.

On Jan. 23, 1940 the patient stated that she felt well and had gained 10 pounds (4.5 Kg.). Most of the cutaneous lesions had disappeared, and only atrophic and pigmented spots marked their previous location. The swellings of the tendon sheath were substantially reduced. The generalized adenopathy persisted, but the individual nodes were greatly reduced in size. A roentgenogram of the chest showed enlargement of hilar glands on both sides and also of the right paratracheal glands. There was slight pulmonary infiltration. Glandular enlargement was perhaps slightly less than on the last examination. Roentgenograms of the hands showed only one cystic area, in the proximal phalanx of the right third digit.

A Case for Diagnosis (Tuberculosis of the Skin?). Presented by DR. HARRY B. FEILER.

P. H., a Negress aged 25, was presented before this society in November 1939 (ARCH. DERMAT. & SYPH. **41**:977 [May] 1940). She has since been studied by Dr. David Reisner at Sea View Hospital. A lesion of the skin, a lymph node and the tonsils were removed for histologic examination.

Microscopic examination of the tissue removed from the right elbow showed stratified squamous epithelium resting on a dense corium. Disrupting the superficial portion of the latter was a zone of extravasated blood. The corium was made up of dense fibrous tissue. It was largely replaced by discrete foci or confluent patches. These were composed of radially or concentrically arranged epithelioid cells with oval or irregular nuclei, round cells and rare giant cells. Occasionally these confluent areas disclosed an irregular central zone of pink granular material in which the outline of former cells could be discerned. The Ziehl-Neelsen stain showed no acid-fast organisms. The histologic diagnosis was epithelioid giant cell tubercles with central caseation.

Microscopic examination of an axillary lymph node showed that the normal lymphoid structure of the node was largely maintained. There were discrete or confluent foci of concentrically radially arranged epithelioid cells which contained few round cells and an occasional Langhans giant cell. There were a few areas of increased fibrous connective tissue with cells showing distorted dark nuclei. The histologic diagnosis was epithelioid giant cell tubercles and fibrosis.

On Jan. 24, 1940 a tonsillectomy was performed. The macroscopic examination showed that each tonsil was roughly ovoid and measured approximately 2 by 1 by 1 cm. The pharyngeal surface was smooth and cryptic. On section each tonsil exhibited a 1 to 2 mm. round yellow-white focus, with a poorly defined capsule.

The microscopic examination showed that the tonsils were largely replaced by discrete or confluent cellular foci of radially and concentrically arranged epi-

thelioid cells with small irregular or large oval vesicular walls. There was a moderate number of round cells in the foci. Giant cells were rarely noted. The histologic diagnosis was epithelioid cell tubercles.

DISCUSSION

DR. DAVID REISNER (by invitation): I am glad to have the opportunity of discussing the question of sarcoid before a group of dermatologists, since they are chiefly responsible for valuable investigations of the cutaneous as well as the systemic manifestations of the disease. Its systemic character is of particular interest to me as an internist.

I have studied the case presented by Dr. Feiler. It is a good example of the association of cutaneous lesions and involvement of the lymphatic system, including the tonsils. My observations indicate that systemic involvement of the lymph nodes is probably the most constant finding in sarcoidosis and that great enlargement of the mediastinal and hilar nodes is one of its outstanding features. However, these changes are only a part of a widespread generalized process which involves various organs or anatomic systems such as the lungs, skin and bones and more rarely the eyes, spleen, liver, parotid and other salivary glands, mucous membranes and lacrimal glands.

I wish to emphasize a few principal points. First, the disease referred to as "sarcoidosis" is inherently a generalized process with a predilection for certain organs or structures. Secondly, while cutaneous manifestations are often present, they do not constitute an essential part of this entity. Thirdly, localization in various organs and their combinations produces a variety of clinical syndromes which have been described under various designations, such as uveoparotitis (in some cases presenting features of Mikulicz' syndrome), atypical tuberculous splenomegaly, Jüngling's disease of the bones and large cell hyperplastic tuberculosis. These various types represent only clinical variants of an identical basic pattern.

DR. SAMUEL M. PECK: The internists should not lose sight of the fact that for more than fifteen years dermatologists have stressed osseous, pulmonary and other involvements as part of the picture of generalized sarcoidosis. The fact that tuberculin anergy is discussed in connection with this disease shows that the dermatologists have taken into account systemic relations. With respect to the histologic picture, a diagnosis is easily made when typical epithelioid cell tubercles are present. Unfortunately, this classic picture is often wanting, and the histologic findings must therefore be evaluated only in association with the clinical picture. It is admitted by all who have experience with the tuberculin test in cases of sarcoid, both the localized and the generalized form, that the test tends to give negative results. Even in the same patient the degree of sensitivity may vary from time to time. This holds true especially for tests for immune and allergic states.

DR. DAVID BLOOM: Judging from the literature, the eruptions recorded as belonging to the group of sarcoidosis rarely show the characteristic histologic picture of sarcoid. I believe that these eruptions fit best into the group of disseminated tuberculosis, seen mostly in the Negro. There must be a special immunity factor in the Negro responsible for this type of attenuated tuberculosis.

DR. GIRSCH D. ASTRACHAN: I am interested in the question of therapy, and I was much impressed with the results obtained in these cases. About a year ago I presented before this society a case of sarcoid of Boeck and Darier-Roussy sarcoid (ARCH. DERMAT. & SYPH. **40**:850 [Nov.] 1939) which was complicated by tumor formation of the superior mediastinum and leukopenia. All kinds of medications, including liver extract, high vitamin diet, iron and filtered roentgen rays were without benefit. Can Dr. Reisner suggest other methods of therapy?

DR. DAVID L. SATENSTEIN: I was taught long ago that it is not safe to take anything for granted. What factors are necessary for a diagnosis of tuberculosis? The fact that the tissue suggests it is in itself not sufficient. A positive reaction

to tuberculin, positive results of animal inoculations and the presence of tubercle bacilli are the necessary criteria.

Sarcoidosis is a condition in which the tissue suggests some form of tuberculosis, as is so frequently reported. However, organisms have not been demonstrated, the patient did not react to tuberculin, and animal inoculations were not conclusive; yet the condition is labeled "some form of tuberculosis."

I have had little experience in treating patients with generalized sarcoidosis, but I have seen and studied many local sarcoids. Clinical lupus vulgaris presents occasionally the microscopic picture of sarcoid; conversely, clinical sarcoids may present the microscopic picture of a low grade lupus vulgaris. At other times both lupus vulgaris and sarcoids may present the microscopic picture of granuloma annulare.

If one asserts that because sarcoid lesions are present in a suspected tuberculous person the sarcoid is some form of tuberculosis, then by the same reasoning lupus erythematosus must also be regarded as some form of tuberculosis since that dermatosis also occurs in combination with sarcoid. Such an assumption is unwarranted. At the present time and until more is learned about the process, the law must be laid down that a diagnosis of tuberculosis needs to be proved, i. e., as to tissue reaction, organisms, reaction to tuberculin and positive animal inoculation.

I am not prepared to accept sarcoid as some form of tuberculosis on the tissue findings alone, as this type of tissue change is noted in a number of other dermatoses which have nothing in common with or no relation to tuberculosis.

Dr. Marion B. Sulzberger: I agree with the majority of the remarks of the previous speakers with the exception of certain opinions expressed by Dr. Satenstein which are at variance with those of most investigators who have studied this disease. An important point is that in most cases of this condition in Negroes the picture is certainly not representative of typical sarcoid. Negroes suffering from sarcoids often have in addition some other forms of cutaneous tuberculosis; one rarely finds a pure sarcoid in the Negro. On the other hand, in the white race it is rare to find sarcoid lesions associated with other forms of cutaneous tuberculosis.

I had the opportunity of seeing 3 of Dr. Reisner's patients. Two of them had lesions that did not impress me as sarcoids. The third had lesions both of sarcoid and of lupus vulgaris. The young Negress presented this evening impressed me as having lupus miliaris disseminatus rather than sarcoid, particularly as regards the lesions on the nose and eyelids. In discussing the problem of sarcoid, it is important to distinguish these forms. Lupus miliaris disseminatus faciei, lupus vulgaris and sarcoid show a different histologic picture, course and response to tuberculin and differ in other respects.

Furthermore, the fact that sarcoid is a systemic disease has long since been recognized by dermatologists. On the whole, this subject is certainly less new to the dermatologist than to the internist. I must emphasize that when one finds caseation in a lesion one is no longer justified in calling that lesion sarcoid. Caseation is typical of lupus miliaris disseminatus faciei, and necrosis is often present in other tuberculoderms, such as scrofuloderma and lupus vulgaris. In the latter, the reaction to tuberculin is likely to be positive and bacilli will be found. One has to be critical, and one certainly cannot say that Dr. Reisner's observations in the Negro are typical of sarcoidosis or sarcoid, for the Negro generally presents mixed and transitional forms rather than pure sarcoidosis of the type usually seen in the white race.

Dr. Louis Chargin: There appears to be an interplay between sarcoidosis and tuberculosis. So far no definite proof exists, histologic, clinical or biologic, that the two diseases have a common causation. Lomholt (*Acta dermat.-venereol.* **18**:131-149, 1937) reported that in cases of sarcoid the tuberculin reaction was positive in 25 per cent, negative in 25 per cent and doubtful in 50 per cent.

Dr. David Reisner (by invitation): The relation between sarcoid and tuberculosis is of interest. I am well aware of the long-standing controversy on this

particular point. It cannot be denied that this question has not been answered to complete satisfaction as yet. I should like to mention only briefly some of my own observations which may have a bearing on this issue. Tissue from one of my patients with sarcoid gave a positive result on guinea pig inoculation. In some cases after a long period of observation active and progressive pulmonary tuberculosis developed. In other instances cutaneous lesions, which both clinically and histologically appeared to be lupus vulgaris, coexisted with widespread lesions characteristic of sarcoid. This is not mere coincidence. I may also add that the presence of necrosis does not necessarily militate against the diagnosis of so-called sarcoidosis, for varying degrees of caseating necrosis have been found in a number of biopsy specimens which in all other respects presented classic features of systemic sarcoid. It may perhaps be argued that I have been inclined too frequently to the diagnosis of sarcoidosis. It seems to me, however, that the borderline cases are of great significance from the pathogenetic point of view. I have used the term "so-called sarcoidosis" advisedly, as it is often extremely difficult to draw a sharp line between sarcoid and tuberculosis, that is, to state definitely where and when the former stops and the latter begins.

Both the clinical experiences and the histologic findings seem to suggest that what is called sarcoid does not represent a static entity but a certain peculiar form, or phase, of an attenuated systemic tuberculous infection, which under certain circumstances may be directly transformed into progressive and destructive tuberculosis. Why this extraordinary behavior exists and whether it is due to an alteration or variability in the virulence of the infectious agent or the result of an unexplained immunobiologic state of the host are of course questions of principal importance to which no adequate answer can be offered on the basis of present knowledge.

DR. SAMUEL M. PECK: The tuberculin test in cases of sarcoid is used for the purpose of diagnosis and not as a support for the theory of tuberculous causation. Furthermore, it is of diagnostic significance only if the result is negative. There are, however, a number of facts which must be explained in connection with the negative reaction to tuberculin in cases of sarcoidosis before a tuberculous causation is denied. Those patients who have a negative reaction to tuberculin show the presence of anticutins. If these immune bodies are not a proof of causation or relation that is specific, they must be relegated to the class of Forssman antibodies. Such a conception in itself is of extreme interest.

DR. MAURICE UMANSKY: The conception of specific anergy cannot be explained solely on the basis of the presence of percutins. The percutins were searched for and not found in some cases of sarcoidosis in which there were negative reactions to tuberculin. The tuberculous nature of the condition in the cases presented tonight seems to be well founded. Other types of sarcoid reaction of the tissues are less likely to be due to the tubercle bacillus. Opinions were expressed that sarcoidosis is a condition sui generis produced by an independent micro-organism. It is possible that the causative agent suppresses the allergic response to tuberculin the same way as it does in measles or scarlet fever, causing temporary anergy.

DR. MARION B. SULZBERGER: One cannot form an opinion on this subject without studying many cases and performing many animal inoculations and serologic studies. Moreover, one must be well acquainted with the many careful studies of other investigators. No mention has been made, for instance, of animal experiments. It is a difficult subject, and there is room for argument. However, the bulk of the evidence is pretty strongly in favor of the tuberculous nature of many examples of sarcoid. Note that I say not all but many, for it is known that sarcoid can be produced by leprosy and syphilis. However, in most of the cases there is evidence that the tubercle bacillus plays a role in this type of lesion. What additional proof would one desire than these Negro patients of Dr. Reisner? For in Negroes one often sees lesions due to tubercle bacilli, such as scrofuloderma, lupus vulgaris and papulonecrotic tuberculid, combined with typical sarcoid of the skin and internal organs. This demonstrates that sarcoid lesions and lesions of true tuberculosis are associated in the most intimate possible manner.

DR. WILLIAM LEIFER (by invitation): During the long period of observation of our case the eruption cleared spontaneously on one occasion. When recurrence took place the patient was given injections of tuberculin followed by a complete disappearance of the cutaneous lesions. It is apparently difficult to evaluate therapeutic measures in this disease.

DR. HENRY SILVER: The concept that sarcoid is an outward manifestation of a more widespread systemic disease is gaining ground. This evening's discussion has brought out clearly the internist's and the dermatologist's point of view. It is of interest that there is so much agreement in principle.

In cases of systemic sarcoidosis the involvement of the organs in the order of their frequency is: lymph nodes, lungs, skin, bones and other organs, such as the spleen and liver. In Dr. Reisner's series cutaneous lesions were present only in 8 cases of 23. The cutaneous lesions vary in shape and size, but they all have fairly typical sarcoid structure histologically. To the internist the various dermatologic types of the disease are irrelevant. To him the disease entity is important. There can be no quarrel with such a conception. It is evident that too much stress should not be laid on clinical appearance in sarcoidosis. In my case, for instance, the clinical aspect suggested first lupus miliaris disseminatus faciei, and only after these lesions disappeared were typical sarcoid lesions seen. The spontaneous retrogression of cutaneous lesions and systemic manifestations in sarcoid cannot be too strongly emphasized, as is well shown in Reisner's cases. This is important in the interpretation of our therapeutic measures and in the prognosis of the disease. I am referring particularly to the frequent argument of the relative value of various forms of therapy (Chargin, L.: ARCH. DERMAT. & SYPH. **36**:458 [Aug.] 1937; **40**:493 [Sept.] 1939).

The controversial discussion of the tuberculous causation of sarcoid will probably continue in spite of the many clarifying points brought out tonight. In favor of the tuberculous causation are: (1) Kyrle's case in which tubercle bacilli were demonstrated in the earliest stages of the disease (Kyrle, J.: *Arch. f. Dermat. u. Syph.* **119**:117, 1914); (2) the histologic picture, which simulates the productive form of tissue reaction often seen in lesions of unquestionable tuberculous origin; (3) the fact that patients with sarcoidosis show coexisting caseating tuberculosis, and (4) postmortem findings of classic tuberculous changes in 50 per cent of cases. I agree that more studies in this direction are necessary to prove definitely the tuberculous causation.

Erythroderma Ichthyosiforme Congenitale. Presented by DR. ADOLPH ROSTENBERG.

The patient, a woman aged 19, was born in the United States. There is no consanguinity. The patient had diphtheria during childhood but no other ailments. According to the mother's statement the cutaneous condition began at the age of 2 years. She has never been free of the disease. During the summer months the skin appears to be paler. At times there is slight itching.

The most pronounced feature of the cutaneous condition is the generalized erythroderma. The face appears red and glossy, the redness being most evident about the nose. There is profuse scaliness of the scalp. On the neck, chest, back and abdomen the erythema is almost diffuse except for a few small normal areas, which give the impression of a bizarre and gyrate picture. The skin in these areas is infiltrated, and there is continuous branny desquamation. The extensor surfaces of the upper extremities are greatly involved, whereas the flexor surfaces are comparatively free of eruption. The skin on the dorsal surfaces of the hands is thickened, and over the second phalanges of several fingers follicular plugs are noticeable. The palms and soles are not involved. The skin of the buttocks and the lower extremities, especially on the flexor surfaces, is considerably thickened, showing the characteristic picture of mild ichthyosis.

Physical examination gave negative results. Urinalysis showed no abnormalities. The Wassermann and Kahn reactions were negative. The blood count, including the differential count, was essentially normal.

DISCUSSION

DR. DAVID BLOOM: The fact that the extensor surfaces of the extremities are involved and the flexor surfaces free would be against a diagnosis of erythroderma ichthyosiforme congenitale as described by Brocq.

DR. DAVID L. SATENSTEIN: I am willing to accept Dr. Rostenberg's concept of these cases. The functional derangement or anomaly was probably present before birth or at birth, but the patient did not show clinical manifestations until the age of 2 years. There are other conditions that do not manifest themselves until puberty or even later in life which are still regarded as congenital anomalies.

DR. HENRY SILVER: I have studied the case with Dr. Rostenberg at the Bronx Hospital. I must admit that in spite of repeated observations of the case I am still undecided as to the diagnosis.

The diagnosis of erythroderma ichthyosiforme congenitale was suggested at the outset. Certain features, however, are lacking, such as consanguinity, involvement of cubital and popliteal regions, keratosis of the palms and soles, increased hair and nail growth and disturbances of other ectodermal tissues. In Jadassohn's handbook (Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1931, vol. 8, pt. 2, pp. 18-19) 2 cases are recorded in which there was a similar picture, 1 by Nicholas and Jambon and the other by Mendes da Costa. In both cases the condition is regarded as a variety of erythroderma ichthyosiforme congenitale and is described as erythroderma and keratoderma variabile or keratosis rubra figurata (Rille). These conditions are transitional forms which bridge congenital ichthyosiform erythroderma and congenital keratoderma. The variability of the clinical picture is one of the main difficulties in arriving at a correct diagnosis.

DR. ADOLPH ROSTENBERG: Considering the fact that the disease, according to the patient's mother, appeared when the patient was 2 years old, it is probable that the condition was already present at birth. This would not speak against its congenital nature. In most of the reported cases the disease was noticed at the age of 2 years or even later.

There are features in this case which differ from those in the majority of the reported cases, i. e., the mildness of the ichthyosis and the involvement of the extensor surfaces of the upper extremities rather than the flexor surfaces. The case can hardly be classified as one of ichthyosis because of the existing erythroderma.

A Case for Diagnosis (Fungating Iodide Eruption of the Tongue? Squamous Cell Epithelioma of the Tongue?). Presented by DR. MARION B. SULZBERGER.

S. M., a man aged 62, was first seen with Dr. Milton Rosenbluth and Dr. J. William Hinton on Feb. 18, 1940. He had suffered from thyrotoxicosis for many years. He had had a partial thyroidectomy twenty years before. The first week in February 1940 he had again been operated on by Dr. Hinton (thyroidectomy). Preceding the operation he had received iodides by mouth for some time, but the administration had been discontinued afterward.

The lesions of the tongue had first been observed about the middle of January. The condition was said to have commenced as a raw, beefy and somewhat swollen tongue, and as the rawness and swelling subsided, two isolated, discrete tumors became visible, one on the dorsum of the tongue near the left side of the tip and the other on the dorsum about 1½ inches (0.7 cm.) farther back and on the left side of the median line. These tumors grew rapidly, so that they began to interfere with the patient's eating.

At the time of the first examination the tumor near the tip of the tongue was small, roughly hemispherical and the size of a pea; the other was lozenge shaped and the size of a bean. Both tumors were elevated, rising about ¼ inch (0.1 cm.) above the surface. They were separated by intervening approximately normal tongue tissue; the surface, however, was flattened and devoid of papillae. Immediately surrounding the larger tumor the papillae were not only preserved but

slightly elevated and perhaps slightly hyperkeratotic. The tumors were freely movable and not visibly ulcerated. They were flat topped, with a whitish coated surface, and were mushroom-like, each having a slightly narrowed, somewhat stalklike peduncle. The area of the tongue surrounding the base was not infiltrated or reddened. The remaining skin and mucous membranes were apparently normal. There were no palpable lymph nodes.

On February 19, with local anesthesia, both tumors were clipped off at the base of the stalk, and the clean-looking, slightly bleeding surface was lightly sparked by electrodesiccation. Healing was uneventful.

The tissue of both tumors was divided into two parts and sent to two pathologic laboratories. Slides of the sections prepared by Drs. Satenstein and Sachs were, with their consent, sent to two other pathologists of large experience. All those who studied the slides were furnished with a detailed description of the clinical appearance and history of the case.

Dr. David L. Satenstein and Dr. Wilbert Sachs reported as follows: "Both sections showed the same type of process. Extending down to the bottom of the section from the lower border of an irregularly acanthotic epidermis was a large epithelial mass arranged in strands and bands and isolated cells. About this were numerous small dilated vessels and a substantial cellular infiltrate which was composed chiefly of polymorphonuclear leukocytes and some small round cells. The palisade layer was entirely missing. The cells composing the mass were of different sizes, most of which were large. They had large, oval, fairly well stained nuclei; the cytoplasm was faintly stained, and the cell outlines were visible. Some of the cells were multinucleated. There were numerous mitotic figures present but no pearls or whorls. The histologic diagnosis was infiltrating undifferentiated epithelioma."

Dr. Henry R. Muller reported as follows: "Microscopic examination showed two pieces of firm grayish white tissue. The larger piece of tissue measured approximately 1 cm. in length and 0.5 cm. in width, whereas the small piece measured 0.5 cm. in length and less than that in width. Both were embedded in 'toto' for sectioning. Microscopic examination of the larger piece of tissue showed a benign papilloma derived from squamous epithelium. Associated with it was an area of purulent inflammation in granulation tissue. In this area there was considerable proliferation of endothelial cells. Mitotic figures were present. The surface was necrotic, and bacterial colonies were seen in it. The small piece of tissue consisted almost entirely of granulation inflammatory tissue, with much necrosis and bacterial growth in the surface layers. A small piece of normal squamous epithelium was attached. The histologic diagnosis was papilloma (in one piece) and granulation tissue, with purulent exudate, necrosis and bacterial growth (both pieces)."

Dr. James Ewing reported as follows: "The sections of lesions from the tongue were difficult to interpret. There were features which strongly suggested a diffuse epidermoid carcinoma, and I do not wonder that this diagnosis has been made. However, the structure lacked the definite features of infiltrating squamous carcinoma. The large cells were probably vascular endothelium. The whole lesion was richly infiltrated with polymorphonuclear leukocytes. Mitotic figures were remarkably abundant. There were a great many new blood vessels. There was superficial ulceration. The history of long administration of iodine raised the question of iododerma. Comparing this section with those of other cases of iododerma in my collection, I find the structure exactly duplicated. I think therefore that the condition is not a malignant process but a remarkable form of iododerma. The case is of so much interest that I should appreciate being allowed to keep the sections to add to my collection."

Dr. Paul Klemperer reported as follows: "Section showed a fragment of tongue somewhat mushroom-like in shape. The stalk of the mushroom was lined on either side by regular squamous epithelium, while the upper part was extensively ulcerated on the surface. The stalk consisted mainly of muscle; the lower part of the cap adjacent to the stalk showed heavily inflamed stroma, while the upper portion of the cap consisted of large polygonal cells with abundant cytoplasm

and large round or oval nuclei, with a fine chromatin network and one or two nucleoli. These cells showed frequent atypical mitoses. Only at the periphery adjacent to the surface epithelium did the cells form islands; elsewhere they were generally separated by polymorphonuclear leukocytes. The histologic diagnosis was immature squamous cell carcinoma with ulceration."

After he saw Dr. Ewing's report, Dr. Klemperer made the following additional report: "I am much impressed by Dr. Ewing's diagnosis. I have compared the slides with those of Eller's case, which I had occasion to study some years ago, and there is certainly a good deal of similarity between them. Apparently I missed the point that the patient had received intense iodide therapy. I recall only that he was operated on for toxic goiter. Of course, I have compared the cells in question with the squamous epithelial cells of the adjacent skin and found also great similarity. For this reason, I have made the diagnosis of squamous cell carcinoma. It seems to me that the final diagnosis will depend on the further clinical events in the case, but I do believe that the resemblance to Eller's case is striking."

DISCUSSION

DR. DAVID L. SATENSTEIN: In the past I have had the opportunity to study the various stages of cutaneous reaction to iodides. In the early stage there is a perivascular lymphocytic infiltration similar to that seen in the early stage of lymphatic leukemia. Later there are two types of processes. One (the more common) develops into the clinical vesicopustular stage, in which there is a liquefaction of the cutis, with secondary changes in the epidermis, and the other, which is rare, is the clinical tuberous form. In this type there is a tissue reaction which is difficult to differentiate from mycosis fungoides. Whatever the changes that take place in an iodide eruption, the changes of the epidermis are always secondary to those of the underlying cutis. In Dr. Sulzberger's case there were projections of undifferentiated epithelial cells extending downward from the under surface of the epidermis. The cutis reaction about these zones was similar to that seen in early infiltrating epithelioma of the anaplastic type.

I doubt the accuracy of the history and observation as to the duration of the lesions. They were probably present for some time, and the accompanying inflammatory reaction seems to have accentuated the development of the lesions. The tentative diagnosis of anaplastic epithelioma is preferable to that of an iodide eruption.

PHILADELPHIA DERMATOLOGICAL SOCIETY

J. V. KLAUDER, M.D., *Chairman*

HERMAN BEERMAN, M.D., *Secretary*

March 15, 1940

Symposium on Cutaneous Diseases in Animals

Introduction. Presented by DR. J. V. KLAUDER.

Symposiums on cutaneous diseases in animals have occasionally been held at meetings of dermatologic societies in Europe but, to my knowledge, never at such meetings in this country; certainly this is the first one in the history of the Philadelphia Dermatological Society. For this privilege the society is indebted to Drs. William L. Lentz, Mack A. Emmerson and Harry M. Martin, of the faculty of the School of Veterinary Medicine of the University of Pennsylvania.

There should be a close relation between veterinarian schools and medical schools in the study and teaching of diseases that occur both in man and in animals. I hope that the time is not too far distant when a chair of comparative

medicine will be created in medical schools. As a matter of fact, Dr. Herbert Fox is professor of comparative pathology in both the medical and the veterinary school at the University of Pennsylvania.

The exhibit on cutaneous diseases in animals at the Ninth International Congress of Dermatology in Budapest, the representation of compartive dermatology on the program of this congress, Henry and Bory's chapter, "Studies of Comparative Dermatology," in "Nouvelle pratique dermatologique" (Henry, A., and Bory, L., in Darier, J., and others: Nouvelle pratique dermatologique, Paris, Masson & Cie, 1936, vol. 3, pp. 753-894), a similar chapter by Heller in Jadassohn's handbook (Heller, J.: Tierdermatosen, in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1930, vol. 14, pt. 1) and the illustrations of cutaneous diseases in animals in "Corpus iconum morborum cutaneorum (Nékám, L.: Corpus iconum morborum cutaneorum, in Deliberationes Congressus dermatologorum internationalis. IX, Budapestini, Sept. 13-21, 1935, Leipzig, Johann Ambrosius Barth, 1938, vol. 5, pt. 3, pp. 848-867) are evidence of the importance and the increasing interest in comparative dermatology.

The dermatologist can profit from a knowledge of cutaneous diseases in animals. For example, a morphologic visualization of cutaneous lesions should include the unique and curiously shaped, round, rectangular, quadrangular and rhomboidal lesions occurring in swine erysipelas. The longer the duration of the infection in man (erysipeloid of Rosenbach), the greater is the tendency for the morphologic appearance of the lesions to resemble that of the lesions in swine. Knowledge of a disease is naturally more complete if it can be studied in animals. I do not refer to the infectious diseases that have been experimentally produced in animals, the history of which furnishes an important illustration of the evolution of the modern knowledge of medicine. I refer to the diseases of man that occur naturally in animals, for example, sarcoma, eczema, pruritus, alopecia areata and seborrheic dermatitis. It appears to me that etiologic and other considerations of such diseases are not complete unless the disease is visualized in animals. In pruritus in dogs, for example, there appears to be a psychogenic aspect, and in eczema in animals, diet apparently plays an important role. Moreover, a dog with eczema is an admirable laboratory specimen for the study of this disease. A discussion of lymphoblastoma is not complete without including the so-called syphiloid of cats. Bory stated the belief that this lesion is the analogue of the Paltauf-Sternberg form of lymphogranuloma in man.

Investigation conducted in the domain of veterinary medicine may profitably engage the attention of the dermatologist. Studies of the sulfur content of wool and its relation to the sulfur content of the soil and of the fodder of sheep have been contributions to the knowledge of the role that metabolism of sulfur plays in the development and growth of keratin. Photosensitizing of animals is likewise of interest to the dermatologist. In white or white-spotted swine or cattle fed on buckwheat and exposed to the sun dermatitis (sparing pigmented areas) and constitutional symptoms (buckwheat poisoning, or fagopyrism) develop. Buckwheat clover and St. John's wort contain substances which photosensitize. Buckwheat contains phyloporphyrin, a derivative of chlorophyll, which closely resembles chemically porphyrin and mesoporphyrin.

Pathologic states in animals and their investigations by veterinarians have a direct relation to human medicine. One illustration of this relation is the disease known as parturient paresis or milk fever of cows, which also occurs in sheep ("lambing sickness"). In this disease there is a considerable decrease in the calcium and phosphorus content of the blood. Symptoms of tetany which characterize the disease are thus explained. These symptoms are dramatically relieved by an intravenous injection of calcium.

The dermatologist may profit from the observations of veterinarians. Dr. Lentz recently told me of a dog in his care which after the birth of her litter did not eat the placenta and suffered an extensive loss of hair. In studies conducted by Brown and me, alopecia in women after pregnancy apparently could not be attributed to a disturbance of sulfur metabolism. An endocrine basis appears to be a reason-

able assumption. These circumstances suggested to me the use of placenta extract in treatment of loss of hair in women after pregnancy. After using this therapy, however, I could not conclude that it was of value.

Presentation of Cases and Lantern Slides. Presented by DR. WILLIAM J. LENTZ (by invitation), Professor of Veterinary Anatomy, School of Veterinary Medicine, University of Pennsylvania.

Ichthyoid Skin in a Bull Dog.—This condition has been present throughout the entire life of the animal. I have never seen ichthyosis in dogs heretofore.

Microsporon Infection in a Dachshund.—The kind of microsporon is unknown.

Staphylococcic Dermatitis in an Irish Setter.—This dog had a neurogenous background. It was hospitalized one week in a quiet place, with treatment. The lesions improved greatly. There has been no change in the dog's diet since its admission to the veterinary hospital.

Alopecia in an Irish Setter.—A diet too rich in carbohydrates caused the condition. Correction of the diet was followed by recovery. Overfeeding is a most important factor in eczema of dogs. The condition may also result from an absence of fat in the diet.

Patchy Eczema in Dogs.—These two dogs were extremely nervous and scratched themselves at the sight of another dog. There was improvement by feeding them every other day instead of once daily. The diet consisted at first simply of milk and commercial dog food.

Follicular "Mange" in Dogs.—This condition was found in a cocker spaniel and a bull terrier. There are two types of follicular (or demodectic) mange, squamous and pustular. I believe that dogs with ichthyoid skins are predisposed to the squamous type of mange. The disease is not contagious; dogs can be put in a kennel with others with little likelihood of their being infested. From a single hair follicle of an animal with the pustular type one can squeeze hundreds of organisms. Treatment consists in keeping the dogs clipped and giving them fresh air, sunlight and a strictly carnivorous diet containing some fat. In some cases the condition appears to be self limiting. The pustular type is often associated with renal disturbance and emaciation.

Dermoid Tumor of the Eye.—This condition occurred at the outer canthus of the eye of a dachshund. It was treated by dissection.

Ringworm in a Fox Terrier.—The infection was contracted from a stray cat. A man, his wife and their child also contracted the disease.

Multiple Furunculosis in a Scotty.—This dog has been fed largely on vegetables, bread and dog biscuit. Dogs fed on vegetables are predisposed to pruritus. The absence of cellulose-splitting organisms in the dogs' intestines may be a factor in this predisposition. This dog also has nephritis.

Generalized Eczema in an English Bull Terrier.—This dog had the worst eczema I have ever seen, but the condition responded almost immediately to autohemic injections and to dietary correction.

DISCUSSION

DR. WILLIAM J. LENTZ (by invitation): Dogs with follicular mange have surprisingly little pruritus. That is, of course, diametrically opposed to scabies (caused by Sarcoptes scabiei).

DR. A. STRAUSS: Does the cat tolerate arsenic better than the dog?

DR. WILLIAM J. LENTZ (by invitation): I think the dog tolerates arsenic better than any other animal. It is surprising what large doses the animal will tolerate. In New Orleans, where the incidence of filariasis (heart worm disease) is so high, a veterinarian told me that he had given as high as 20 to 25 grains (1.2 to 1.5 Gm.) of arsenic in one dose. He said that this dose either kills or cures. I have given a total dose of 20 grains (1.2 Gm.) of arsenic to a dog, without deleterious effect, so far as I could ascertain. I have also frequently

given 1 grain (0.06 Gm.) of arsenic daily for long time safely and with improvement in the animal's condition. Recently I saw a pointer which was so emaciated that the owner wished to have it destroyed. I used this dog to test the extent to which he would tolerate fat. He was fed suet and 1½ pints (710 cc.) of milk daily and became fat. I have no explanation for this observation. I have observed many cases of eczema in the dog due to the omission of fat from the diet. For some reason or other, the public believes that dogs should not have fat, but I believe the treatment for some cases of eczema is simply to give fat. Part of the reluctance to give fat arises from the fact that it becomes rancid. Its omission from dogs' diets may explain why in some kennels many dogs are found with coat, skin and body in poor condition.

Roentgen Rays in the Treatment of Diseases in Animals. Presented by Dr. Mack A. Emmerson (by invitation), Assistant Professor of Veterinary Surgery and Obstetrics.

Roentgen ray therapy in the treatment of the diseases of animals is new, especialy in this country. Nevertheless, many experiments have been carried out on the dog. What I have to offer this evening are the results obtained in the various species of animals. The skin of a Jersey cow was found to tolerate at least twice as much roentgen radiation as that of a man, when given at a single dose.

I have never seen in a large animal, that is, a horse or a cow, any sign of a cutaneous erythema as the result of irradiation. One of the first effects to be noted is discoloration of the hair, and then, if the dose is large enough, epilation and vesiculation occur. As a result of various tests on the cow, I found that this animal's epilation dose is 1,250 r. Professor Pommer, of Vienna, has ascertained that the epilation dose on the heavily haired parts of the body of the dog is between 1,080 and 1,200 r. I have experimented and found that in the sparsely haired parts of the dog's body I can produce erythema and temporary epilation with between 650 and 750 r. On the more heavily haired section of the body between 1,080 and 1,200 r is required to produce epilation, with no signs, again, of erythema.

Actinomycosis of the Mandible of the Cow.—The cow was given 2,026 r in five treatments, with decided improvement in the physical condition of the animal but poor results from the standpoint of destruction of the fungus.

Carcinoma of the Third Eyelid Extending onto the Orbit in a Western Horse.—This condition was treated with 2,000 r, and the result has been good.

Hoof Canker in a Horse.—The condition in this case responded favorably to 1,600 r to each foot, in four treatments over two weeks, but it later recurred. The experience of the Viennese, however, in similar cases has been disappointing.

Scotty with an Interdigital Cyst (Epidermoid Carcinoma).—This lesion was removed surgically on July 26, 1938. By July 29 the growth had recurred and was larger than the original cyst. It was found histologically to be an epidermoid carcinoma. Involution was brought about by 812 r of roentgen rays in two treatments. The animal lived about a year and then died of a severe hemorrhagic gastroenteritis and extreme renal fibrosis, but with no recurrence or metastasis.

Collie with Inoperable Epidermoid Carcinoma of the Paw.—In this dog, which was 15 years old, 2,500 r caused a partial clearing up in two weeks of the visible process. The dog has survived for eighteen months without evidence of metastasis, although the original involvement is not entirely gone.

Wire-Haired Fox Terrier with Anal Carcinoma.—This 4 year old female dog was treated with roentgen rays from September to October 1938, for anal carcinoma. In the eighteen months since then there has been no recurrence.

Dachshund with Carcinoma at the Site of Removal of an Incisor Tooth.—The lesion was treated with roentgen rays twice, with a total of 900 r. The dog died in November 1939 of severe gastroenteritis, but no metastases were found at autopsy.

Dog with Sarcoma on the Inside of the Cheek.—The dog, a cross between a shepherd and a collie, a 12 year old male, was given 2,800 r, in four treatments in eight days, followed by surgical removal of the tumor. An additional 1,200 r in two treatments was administered after the operation. The local lesion regressed completely under this treatment, but at the postmortem examination six months later, lesions suggestive of metastasis were found in the lungs.

Sarcoma in the Axillary Region of a Beagle.—This animal was given two series of treatments, totaling 8,000 r. It died six months later of generalized lymphosarcomatosis with jaundice, the result of occlusion of the bile duct by the tumor.

Digitate Verruca on the Inside of the Ear of a Dog.—This lesion completely regressed after treatment with 1,500 r in four weeks.

Sublingual Papilloma (Carcinoma?) Involving the Side of the Cheek of a Dog.—This dog received nine treatments of 1,600 r over fifty-three days, with complete regression of the lesions. They subsequently recurred and are now responding to a second series of roentgen ray treatments.

Multiple Verrucae in the Mouth and on the Gums of a Dog.—These lesions, which had previously resisted all forms of treatment, were given two treatments totaling 600 r and showed great improvement at the second treatment. The animal was supposed to return for a third one, but he never came, and, according to verbal report from the owner, the lesions disappeared completely.

Nonspecific Granuloma on the Dorsum of the Tongue of a Dog.—After three roentgen ray treatments, the large lesion was removed surgically, and there has been no recurrence.

Cancer of the Anus in a Harlequin Great Dane.—This 3 year old animal has received 2,000 r in six treatments spread over fifteen days and now has only a small, nonpigmented papule at the anus.

Epidermoid Carcinoma of the Vulva in a Shetland Pony.—The animal received 2,500 r in five treatments over nine days, and the lesion rapidly improved. There has been no recurrence to date.

DISCUSSION

DR. A. STRAUSS: Do carcinomas metastasize in animals as they do in human beings?

DR. MACK A. EMMERSON (by invitation): From my limited experience, I should say that they do.

DR. JOHN B. LUDY: Has a special examination of the skin of the dog shown a greater content of metal than in the skin of a human being? If it did, would that account for the fact that larger doses of roentgen rays can be given?

DR. MACK A. EMMERSON (by invitation): I cannot answer that question.

DR. FRED D. WEIDMAN: Of course the feathers of birds contain quantities of copper, do they not?

DR. MACK A. EMMERSON (by invitation): Yes.

DR. FRED D. WEIDMAN: Is there any in the skin?

DR. MACK A. EMMERSON (by invitation): I do not know. I thought the pigment in the hair and skin was possibly responsible for the large doses of roentgen rays which animals can stand, because in the nonhairy areas they cannot stand nearly so much. They can stand it on those hairy areas even with the hair clipped off.

DR. WILLIAM J. LENTZ (by invitation): It would appear that the skin of the dog has great powers of absorption, perhaps greater than the skin of man. Some years ago Dr. John Marshall shaved the side of a dog's chest and then painted it with a commercial hair dye containing lead and in forty-eight hours recovered lead from the spleen and liver. In my experience I find that dogs do not stand mercury well. Of course with pediculosis many persons use ammoniated mercury and set up a mercurialism in a short time. Dogs seem to absorb about

everything applied to the skin. That is why one has to be so careful in applying medicaments to their skin.

DR. THOMAS BUTTERWORTH, Reading, Pa.: Is it true that malignant melanoma is much more frequent in white animals than in pigmented animals of the same species?

DR. HARRY M. MARTIN (by invitation): Malignant melanomas seem to be more frequent in white and gray horses, but the skin of these animals is usually pigmented. However, malignant melanomas are not uncommon in pigmented animals. I recently saw this condition in 2 dark skinned animals (dogs).

DR. A. STRAUSS: Is the dosage for the young pig about equal to what would be used for the cow?

DR. MACK A. EMMERSON (by invitation): I have had no occasion to try the pig's tolerance to roentgen rays. I have a sow in the hospital now from which an 11½ pound (5,216 Gm.) actinomycotic tumor was removed. It is planned to irradiate the site of this lesion, and I may be able to answer this query later.

DR. A. STRAUSS: Dr. MacKee told me he had used young pigs in experimental work for determining skin dosage, since he found it nearest to human skin for this purpose.

DR. MACK A. EMMERSON (by invitation): I am glad to learn that. I consider all animals about the same—horse, cow and dog. Of course I have not run any actual test for skin tolerance alone, but the horses that have been treated seem to require the same amount of irradiation for discoloration of the hair as do the cow and the dog.

Parasites Affecting the Skin. Presented by DR. HARRY M. MARTIN (by invitation).

Microscopic and stereopticon slides are presented showing the following parasites or parasitic diseases:

1. *Mange,* in the ear of a rabbit. This condition is due to at least two species of mites. Large crusts may occlude the orifice.

2. *Scabies,* in a fox. This condition is rather common and is now a special concern of sportsmen.

3. *Demodectic mange,* in cow and dog

4. *Creeping eruption.*

5. *Mites:* (*a*) red mites of chickens, (*b*) larval form of Trombicula, commonly known as the chigger, (*c*) scabies mite, (*d*) sheep mite, (*e*) mite producing foot mange in horses, (*f*) mite causing mange in cats and (*g*) Demodex folliculorum.

6. *Pediculosis:* (*a*) chicken louse, (*b*) biting louse of the dog, (*c*) sucking louse of the dog, (*d*) common hog louse and (*e*) head louse of man, Pediculus capitis.

7. *Cat flea.*

Colored Motion Pictures of Some Common Cutaneous Diseases in Domesticated Animals with a Correlation of the Same Diseases in Man. Presented by DR. J. V. KLAUDER.

Dermatitis Exfoliativa in a Horse.—The entire skin of the animal was involved. There was extensive desquamation composed of large scales. At places the skin was either thickened, edematous, moist and oozing or fissured. The animal had severe anemia. It died suddenly. From postmortem examination the apparent cause of death was intestinal obstruction.

Seborrheic Dermatitis in Cow and Calf.—In the cow the involvement was generalized. There were scattered irregularly shaped and ill defined patches in which the hair was absent or sparse. These areas were covered with fine greasy scales and presented little or no inflammation. The calf had considerably fewer

lesions which were sharply circumscribed and almost devoid of hair; the lesions resembled tinea. Microscopic examination of the scales from the lesions in both animals gave negative results for fungi. Recovery ensued in both animals after applications of 12 per cent sulfur and 8 per cent salicylic acid in petrolatum.

Cutaneous Lesions of Swine Erysipelas.—One animal which recovered from the acute septicemic form of the infection presented on its back large, dry scaling patches, the desquamating remains of erythematous, purplish lesions that were present during the acute stage. The distal portions of both ears sloughed, which is not an uncommon occurrence after recovery from the acute stage of the infection. Such sloughing may include portions of the skin and also of the tail.

Fig. 1.—Lesions that characterize the mild form of swine erysipelas, so-called diamond skin disease.

Concomitant arthritis, a notable symptom of the infection, was evidenced by swelling of the joints and by the stilty gait of the animal.

Cutaneous lesions which characterize the mild form of the infection in swine—so-called diamond skin disease—were shown. Such lesions, variable in size, were rounded, rectangular, quadrangular and rhomboidal. At places there were confluent lesions producing an outline unique in the domain of morphology of cutaneous diseases.

Syphiloid of the Cat.—The animal presented on the inner surface of the upper lip a sharply circumscribed, elevated plaque, the surface of which was flat, moist and about 1.5 cm. in diameter. The cervical lymph nodes were enlarged. This disease in cats is characterized by the presence of rounded or oval plaques that

favor the region of the genitalia, around the anus, on the abdomen or the inner surfaces of the hind legs, with enlargement of the regional lymph nodes. If the lesions disappear, they usually recur. The general health of the animal is eventually affected and death ensues. Clinically such a lesion has a striking resemblance to a hypertrophic mucous plaque of syphilis. Henry and Bory (*Ann. de dermat. et syph.* **10**:104, 1929) compared the histologic appearance of the lesion with that of lymphoblastoma and the appearance of the enlarged lymph nodes with that of Hodgkin's disease.

Alopecia Areata in a Dog.—There were a number of rounded spots devoid of hair, the skin of which was smooth and showed no pathologic alteration. The regions involved were the face and ears and part of the trunk. The disease was similar in appearance to that in man.

Sarcoma in a Dog.—A female bulldog aged 9 years presented on the right flank an infiltrated, hairless plaque about 5 by 3 cm. An amelanotic melanoma was diagnosed histologically. The animal was shown at a previous meeting of the society (ARCH. DERMAT. & SYPH. **37**:688 [April] 1938). Despite roentgen irradiation and a minimum sulfur intake in the diet (ARCH. DERMAT. & SYPH. **38**:160 [July] 1938) the animal died.

Fig. 2.—Actinomycosis, so-called lumpy jaw, in a cow.

Pyogenic Infections in Dogs.—A police dog presented on the face and legs sharply marginated, round and oval erosive lesions, the surfaces of which were bright red, some of which were moist and oozing and others, slightly elevated and crusted. The animal had loss of appetite and diarrhea. The temperature was normal. The lesions resembled impetigo of Tilbury Fox.

On the abdomen and around the genitalia of a chow there were about six superficial erosive lesions which were circinate and gyrate in outline. Others were shaped like the letter S or the figure 8. Their surfaces were moist and oozing. The lesions resembled circinate lesions of impetigo seen in man.

Scattered over the trunk of a scotty there were a number of marginated, rounded, crusted lesions which discharged seropurulent secretion.

A German shepherd dog presented on the abdomen around the genitalia a large, irregularly outlined, bright red patch with a moist, oozing surface. The lesion resembled intertrigo in man. There were similar but smaller lesions on the face and in the submaxillary region.

The following examples of eczematous lesions in different dogs were shown: circumscribed, rounded, dry, crusted lesions that resembled nummular eczema in man; moist, oozing patches of acute eczema, and chronic, thickened, lichenoid lesions of eczema. Examples of the following lesions were also shown: actinomycosis ("lump jaw" in cows), multiple cutaneous tumors in a colt and "red" or

the dry form of mange (Demodex folliculorum) in a dog. In this animal the entire skin was erythematous and covered with fine scales. There was partial loss of hair.

Dermatoses of Wild Animals in Captivity (with Lantern Slides). Presented by DR. FRED D. WEIDMAN.

Pediculosis in Monkeys.—Pediculosis is not common in monkeys; the parasites are seldom observed at necropsy. The scratching is due rather to dandruff or other conditions than to pediculi. Monkeys become lousy (1) when they do not have a cage mate whereby they mutually disinfest each other, or (2) when, as in the case of the spider monkey (Ateles), even with a cage mate, the thumb is such a small nubbin that it cannot be used to grasp the parasite. Morphologically the parasite is the same as that of man, but dark brown. Obviously it becomes increasingly difficult to distinguish between Pediculus capitis and Pediculus corporis in monkeys.

Scabies in Camels.—An enzootic disease at the Philadelphia Zoo affected several camels, all of which died from exposure because their winter coats did not grow, owing to the ravages of the parasite. The crusting was so great that the condition compared with the Norwegian scabies of man.

The infestation was transmitted to 7 or 8 of the keepers and even to the truck driver who hauled away the carcasses. As is usual in cases of scabies of animal origin, the dermatitis transmitted to the human being responded promptly to treatment.

Scabies in Apes.—A chimpanzee and an orang-utan yielded a parasite which was morphologically identical with that of man. Unlike the human condition, the scalp was affected; the fingers escaped. The keeper and his wife were infested (Weidman, F. D.: Certain Dermatoses of Monkeys and an Ape, ARCH. DERMAT. & SYPH. **7**:289 [March] 1923).

Creeping Eruption.—Among the first hosts ever described for this intestinal parasite, Ancylostoma braziliense, was a lion in a menagerie in Calcutta. Bengalese cats and dogs, as well as 3 convicts, were parasitized (Weidman, F. D.: Distribution of Uncinaria Among the Lower Animals, *J. Comp. Path. & Therap.* **38**:313 [Dec.] 1915). The feces of man, too, are a reservoir for the dissemination of creeping eruption.

Fungous Infections.—Tinea circinata was observed in young Barbary apes (Macacus inuus). There were extensive rings and patches of white scales on the head, the anterior surface of the arms and the abdomen. The centers were hairless. Trichophyton gypseum was isolated.

Ringworm in Chimpanzees (Pan Satyrus) and a Gorilla (Gorilla Gorilla).—This occurrence is common. The condition involves the inside of the thighs, the axillas and the abdomen. Small patches of papules have occurred on the cheek and on the flexor surfaces of the forearms. Lesions were grouped but not annular and apparently not itchy. Trichophyton equinum has been revealed in culture. Altogether I have observed 4 chimpanzees and 1 gorilla with dermatophytosis out of 11 animals examined and saw a chimpanzee in the Rome Zoological Garden which appeared, clinically at least, to have the condition. I have observed it in an experimental monkey in the laboratory, and there are other similar reports in the literature. At the Philadelphia Zoological Garden it does not appear to affect at all commonly the smaller monkeys, such animals as are likely to be used as pets.

However, the common rhesus (Macaca mulatta) was found affected by what was probably seborrheic dermatitis, as the scrapings exhibited budding organisms resembling Pityrosporon ovale. It involved the axillas and the sides of the chest and faded out into the surrounding skin. It was extremely superficial, with thick, scaly, yellowish to granular accumulations, and similar to dandruff except that it was distinctly yellow.

In an Indian rhinoceros (Rhinoseros unicornis) an exfoliative dermatitis was apparently due to a pityrosporon which was cultured and named Pityrosporon

pachydermatis. Incidentally, Ciferri has adopted this strain—right or wrong—as the type species for the genus Pityrosporon (Ciferri, R., and Redaelli, P.: *Ann. mycologici* **27**:261, 1929). Large, polygonal, barklike scales covered the entire body. An unidentified monilia was associated. I observed the same condition, but less extensive, in an African elephant in the Central Park Zoo in New York and saw a pityrosporon in the scrapings (Report of the Laboratory of the Museum of Comparative Pathology, Philadelphia Zoological Society, Philadelphia, 1925, p. 36).

Molluscum Contagiosum.—This condition was observed on the head of a wild turkey. Coalescent nodules the size of small marbles covered the comb, wattles and periorbital region.

"Lentigo" in Chimpanzees (Pan Satyrus).—This term is not exact, because the macules do not quite correspond to the lentigo of man. Normally some of these

Fig. 3.—Ringworm of groin and neck in a chimpanzee. Note scaliness of neck and upper part of chest.

animals are universally and diffusely "high yellow," especially females. In other chimpanzees the entire skin is black. In either event, the skin of the face is much paler. In 2 mulatto females, 5 and 7 years old, there were numerous black macules on the face, and in a third, 8 years old, a black patch in addition, on and around the nose. This may extend onto the mucosa of the lips. These lesions are blue black, like the blue nevus of man, and exhibit the histologic structure of the latter condition. In short, in chimpanzees, there is considerable variation in their pigmentary patterns. Orang-utans, which are red haired, do not exhibit the foregoing macular features. There is a promising field for studies of cutaneous pigmentation in these apes.

Erythema of the Face in Monkeys (Macaca Suscata).—Certain females exhibit this physiologic erythema at the menstrual period, and it is also occasionally observed in the male. Erythema and edema likewise occur around the buttocks and the vulva. It is most obvious in the case of baboons, in which the projections in females are sometimes huge. All of these conditions are evidently secondary sexual phenomena and may be suggestive in relation to acne vulgaris and other

Fig. 4.—Exfoliative dermatitis in Indian rhinoceros (from the Philadelphia Zoological Garden). Predominating organism P. pachydermatis, morphologically identical with the P. ovale of human seborrheic dermatitis. Observe the honeycomb-like pittings immediately in front of the ear.

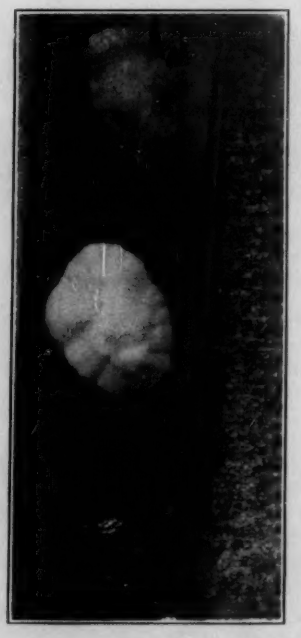

Fig. 5.—Culture of P. pachydermatis (from rhinoceros with generalized exfoliative dermatitis).

dermatoses of man. Incidentally, at the London Zoological Gardens, monkeys have been spayed, whereupon the erythema failed to occur at the menstrual period; on administration of an estrogen the erythema was resumed during the menstrual period. The "sexual skin" of monkeys may be a suitable test object for studying the endocrinopathies (Zuckerman, S.: *Proc. Zool. Soc.*, London, 1930, pp. 702 and 718). An extreme grade of edema developed along the thighs of a female given large doses of solution of potassium arsenite (Weidman, F. D.: Certain Dermatoses of Monkeys and an Ape, ARCH. DERMAT. & SYPH. **7**:289 [March] 1923).

DISCUSSION

DR. GEORGE M. LEWIS: I was interested in one practical point that was not brought out in regard to ringworm in animals. In dermatology fluorescence is made use of in discovering the extent of ringworm infection, and it is sometimes difficult to determine when cure takes place without resort to careful examination with the patient under the fluorescent rays. I wondered whether physicians here are in the habit of using such a light in the detection of ringworm in animals. Another question is in regard to ringworm in cats. It has been found to be easy to infect cats with ringworm, and one can almost at will transfer the infection to other cats, but when the cats reach a certain age it is impossible to go further with the work. At puberty, the infection apparently tends to die out in cats, as in man. I wonder whether this observation would apply also to dogs.

DR. REUBEN FRIEDMAN: The resemblance which the sarcoptic mite of the dog and of the cat bears to the sarcoptic mite of human beings leads me to the observation that it was not until about two decades ago that, thanks to the work of Warburton (*Parasitology* **12**:265, 1920) and others, it was determined that these mites found in various animals were not different species but merely different varieties of the same species, Sarcoptes scabiei. It was Buxton (*Parasitology* **13**:114 and 146, 1921) who made the conclusive experiments with his studies on the horse. He compared the various parts of the external anatomy of the equine mite and the human mite and found there was little or no difference—certainly not enough to constitute a different species.

News and Comment

DEATH OF DR. PUSEY

As this issue was going to press, word was received of the death of Dr. William Allen Pusey, Editor Emeritus, on August 29.

Book Reviews

Handbook of Skin Diseases. By Leon H. Warren, M.D. Price, $3.50. Pp. 321. New York: Paul B. Hoeber, Inc. (Medical Book Department of Harper & Brothers), 1940.

The author of this small volume has gathered together information on two hundred and fifty-two cutaneous diseases and presents their essential features under the following headings: etymology, synonyms and eponyms, essential nature, diagnostic features, differential diagnosis and treatment.

The title itself prepares the reader for a compact and abbreviated outline of cutaneous disease; however, in some instances the form is almost too telegraphic. The histologic descriptions are good for the most part; a few occupy relatively too much space at the expense of other aspects (especially diagnostic features and treatment), which might have been developed more fully.

The diseases are presented in alphabetical order, which makes it an easy matter to find the desired subject. In addition, the subjects are well indexed, the descriptive name as well as the proper name of an entity being given. Not the least of many notable features is the chapter devoted to general principles of therapy, in which is found many time-honored formulas as well as physical means of treatment of the skin.

This is a worth while volume which, because of its distinctive features, should fill a need of the student as well as of the specialist. In the term keratoderma palmaris et plantaris the author's usual appreciation of Latin and Greek suffered a brief lapse.

Reports on Medical Progress 1939 as Published in the New England Journal of Medicine. Compiled and Edited by Robert N. Nye, M.D. Price, $5, cloth. Pp. 562. Boston: Little, Brown & Company, 1940.

The *New England Journal of Medicine* has, for many years, been publishing reports of progress in various branches of medicine. The reports which appeared weekly during 1939 were somewhat different from previous ones. Each review was limited to approximately 4,000 words. The book consists of fifty-two chapters written by fifty-four authors covering the fields of general medicine, surgery and the various specialties. Following each chapter is a list of references almost wholly limited to the years 1937 and 1938. There is an excellent index.

Dermatologists will be particularly interested in the chapters on tuberculosis, the water-soluble and fat-soluble vitamins, physical therapy, cancer, allergic diseases, syphilis and dermatology.

The desire of the editor that this volume "constitute a unique type of year book" has apparently been fulfilled. It should be of definite value not only to the general practitioner but to the specialist who wishes to be informed of the recent advances in fields of medicine other than his own.

CORRECTION

In the article by Dr. Solomon Greenberg and Miss Ella D. Mallozzi, "Experiments in Poison Ivy Sensitivity: Effects of Specific Injections on the Level of Sensitivity to Quantitative Patch Tests and on Clinical Susceptibility," in the August issue (ARCH. DERMAT. & SYPH. **42**:290, 1940), the word "Negative" in the last line of table 2 on page 295 should read "Control," and the number "159" in the first line of the paragraph appearing immediately under table 2 should read "119."